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Pesticide Plant To be Constructed In West Canada

Winnipeg Firm Announces First Basic Facility

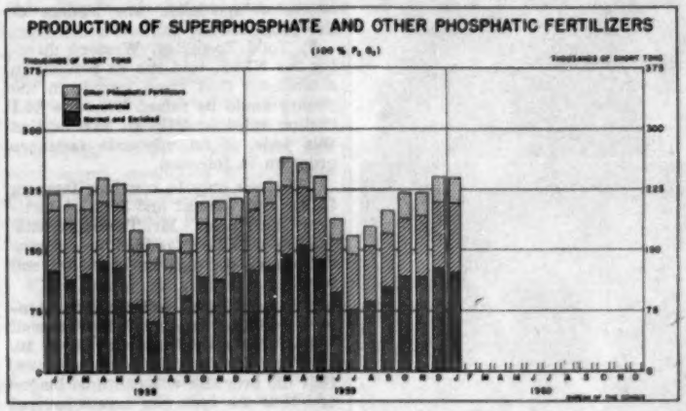
WINNIPEG—Plans to build Western Canada's first basic chemical pesticide plant were announced by George H. Fast, general manager of Interprovincial Cooperatives Ltd., Winnipeg. Construction will begin within a year, at a site to be announced, in the Alberta-Saskatchewan area.

Since 1953, Interprovincial has formulated pesticides at its St. Boniface plant, and has supplied cooperatives across Canada with herbicides, insecticides, rodenticides, fumigants and other agricultural chemicals.

The plant will be strategically located so that the major part of its raw materials can be supplied from the immediate area, and it will be in an economically sound location to market its finished goods, Mr. Fast said. Its capacity will be large enough to meet the demand for these products in Canada.

The new plant is part of Interprovincial's over-all chemical operation. It is designed to facilitate expansion of production when required. Furthermore, its flexibility permits the development and manufacture of new products as required by the changing needs of a growing Canada, the firm states.

Interprovincial Cooperatives Ltd. is a national organization supplying goods and services to all provinces across Canada.


PRODUCTION OF SUPERPHOSPHATE AND OTHER PHOSPHATIC FERTILIZERS
(100 % P_2O_5)
THOUSANDS OF SHORT TONS
375
300
225
150
75
0
Other Phosphatic Fertilizers
Concentrated
Normal and Enriched
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1958
1959
1960
BUREAU OF THE CENSUS

SUPERPHOSPHATE OUTPUT—January, 1960, production of superphosphate is slightly above that of the same month of both 1958 and 1959, as seen in the above chart. High point for the two-year period was March, 1959, according to figures just released by the U.S. Bureau of the Census.

Superphosphate Production, Shipments, Stocks Increase During January, 1960

WASHINGTON—U.S. January production of superphosphate and other phosphatic fertilizers amounted to 239,715 short tons, compared with January, 1959, output of 225,616 short tons, reported the Bureau of the Census, U.S. Department of Commerce.

Shipments during the month of superphosphate and other phosphatic fertilizers totaled 163,390 short tons, or an increase of 6% over the volume shipped during the corresponding month in 1959.

Stocks held by producing plants as of Jan. 31, 1960, amounted to 377,821 short tons, or 3% more than those held on December 31, 1959.

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Sulfuric Acid Output Lowest Since 1954

WASHINGTON — Byproduct sulfuric acid production at copper and zinc plants in the U.S. in 1959 totaled 1,086,000 short tons (100% basis), compared with 1,234,000 tons in 1958, and was the lowest since 1954, according to the Bureau of Mines, U.S. Department of the Interior. The acid reported is that produced only from the sulfur content of the sulfide ores.

The upward trend in output of acid at copper plants which began in 1949 was reversed in 1959, due to the strikes that began in mid-August, and production fell 43% below 1958. Output of acid at zinc plants rose 9% in 1959.

By-Product Sulfuric Acid* (100% Basis) Produced at Copper, Zinc and Lead Plants in the U.S., 1950-54 (Average) and 1955-59, in Short Tons.

1950-54 (average)	837,423
1955	1,112,052
1956	1,172,134
1957	1,337,530
1958	1,233,961
1959	1,086,039

*Includes acid from foreign materials.

In addition to the byproduct acid shown in the table, some of the zinc plants canvassed produced the following quantities of sulfuric acid from native sulfur: 1950-54 (average) 223,291 tons; 1955, 153,622; 1956, 136,749; 1957, 135,843; 1958, 94,758; and 1959, 100,062 tons. Sulfur consumed to make the foregoing quantities was: 1950-54 (average), 76,642 tons; 1955, 53,121; 1956, 46,583; 1957, 46,814; 1958, 32,836; and 1959, 36,469 tons. No sulfur was used at copper plants that produce byproduct acid.

Preliminary Tests on Coated Fertilizer Reported by Minneapolis Company

MINNEAPOLIS — Preliminary research on compounds that wrap fertilizer granules in a film to prevent loss of nitrogen from leaching or volatilization, keep phosphate from being tied up by other minerals in the soil and prevent crops from taking more potash than they need for growth, has been reported by Archer-Daniels-Midland Co. of Minneapolis.

According to Dr. Verne Bidlack, ADM researcher, the company is thinking in terms of a coated fertilizer that would have a slow release of plant nutrients, thereby improving efficiency of the fertilizer. Dr. Bidlack said several new compounds would also be tested during the coming summer.

He said the coating wouldn't dissolve in the soil, but would allow moisture to penetrate the granule. This would let the roots take plant food out of the granule through the film. The coated granules would be made to start releasing nutrients at the time when the plant needs it; with small amounts being released in the beginning, and progressively larger amounts following. To accomplish this, the kinds and thicknesses of the coatings would have to be varied, Dr. Bidlack said.

Other advantages for coated fertilizer, the company says, would include:

- Stopping soluble salts of nitrogen and potassium from dehydrating young seedlings.
- Preventing other soil minerals from tying up phosphate in compounds that the plants couldn't use.
- Preventing corrosion to equipment and to skin tissue.
- Preventing caking.
- Eliminating "burning" of lawns and keeping lawns green all season with only one application.

In preliminary tests in conjunction with the University of Minnesota at the university's experiment station in Rosemount, Minn., the researchers obtained perfect stands of corn when they put 400 lb. of coated 5-20-20 in a row at planting time. In tests on lawns, the researchers reported no "burning" when 3,000 lb. of coated

(Turn to COATED, page 20)

Citizens' Appeal to Halt USDA Program Ends in High Court

Hearing Against Gypsy Moth Spray Refused By U.S. Supreme Court

WASHINGTON—The long battle of thirteen residents of New York State to stop the U.S. Department of Agriculture's spray program for eradication of gypsy moth has apparently reached a dead end with refusal of the U.S. Supreme court to look into the legality of the USDA program. Despite a minority statement by Justice William O. Douglas to the contrary, the high court on March 29 refused to hear the petition of the plaintiffs.

The government's anti-gypsy moth program calls for treating of some 4 million acres in ten states. The small group of citizens opposed to the action, first took their plea for an injunction to Federal District Court in Brooklyn. After a long trial there, the court held that the spraying program was authorized by law and was constitutional.

The Second Circuit Court of Appeals later held that the question was moot since the program in the meantime had been mostly completed, and

(Turn to APPEAL, page 20)

Missouri Fertilizer Plant Purchased By Darling & Co.

CHICAGO—Darling & Co., Chicago, has purchased the plant food facilities formerly owned by the Tri-State Chemical Co. south of Webb City, Mo., according to an announcement by William T. Corl, general manager of Darling & Co. plant food division in Chicago.

George M. Babb of Joplin, Mo., has been appointed manager of the local plant, which will be under the supervision of H. L. Stangel, manager of Darling & Co., East St. Louis, Ill. division. In keeping with company policies local personnel will be employed to operate the plant. Frank Martin of Webb City, a Darling & Co. sales representative in southwest Missouri for the past two years, will continue in that capacity and will have an office at the plant.

The Webb City plant will be the fifth plant in the Darling & Co. plant food division, other plants being at Chicago, East St. Louis, Cairo, Ill. and Cedar Rapids, Iowa.

Darling & Co. was started in 1882 and was one of the first companies selling fertilizer in Missouri. Their product is known as Darlings' Pelleted Soil Builders.

Mr. Babb reported that repairs will start immediately in order to make the plant ready for shipments for the current fertilizer season.

MONTANA GROUP ELECTS—The Montana Plant Food Assn. elected new officers at its recent meeting in Bozeman, Mont., discussed various phases of soil fertility, and launched an accelerated soil fertility program in Flathead County. In top photo are the new officers: front row, left to right: Warren Stensland, Cominco Products, secretary-treasurer; Homer Turner, Anaconda Co., president; Lars Gallup, Whirry Soil Service, vice president. Back row: Bill Aldworth, Farmers Union Central Exchange, director; Bernard L. Brown, Montana State College, director; and Lyle Ekstrom, Anaconda Co., director. In center photo four of the 85 persons present at the meeting inspect a "fertilizer dollar bill" used in the program. Left to right are Doug Jamison, Cominco Products, Inc.; F. Todd Tremblay, National Plant Food Institute; Stan Halvorson, Equity Supply Co.; and Walt Mauritson, county agent. In lower photo, the fertility program gets a harmonious sendoff from five participants in the Montana conference. Left to right: (front row) Homer Turner; Eugene Gillette, president of the Kalispell (Montana) Chamber of Commerce, at piano keyboard; and Bud Manion, chairman of the Chamber's agricultural committee. At rear are Walt Mauritson and F. Todd Tremblay. Flathead County will be the first area in the Western portion of the U.S. to participate in an intensified soil fertility program of this type.

Montana Group Launches Accelerated Soil Fertility Program to Step Up Farm Income

BOZEMAN, MONT.—An accelerated soil fertility program which would put an estimated 1.5 million more dollars in Flathead County farmers' pockets, got an enthusiastic send-off at the Flathead Agricultural Council meeting on March 8. The "Kick-Off" banquet was the first phase in an intensified soil fertility program being sponsored jointly by the Montana State College extension service and the National Plant Food Institute. Walt Mauritson, county extension agent, and Bernard L. Brown, soils extension specialist, are leaders of the program.

F. Todd Tremblay, Western director for NPFI, told the 85 persons in attendance that gross income in the county could be raised from the $4.1 million total in 1959 to $5.6 million this year, if an adequate fertilizer program is followed.

"We seek only to convince farmers to use the amount and kind of fertilizers they need," Mr. Tremblay said. "These will be standard recommendations of the college based on soil tests."

A concentrated soil fertility campaign will be conducted in Flathead County for a week starting April 10. Mr. Tremblay pointed out, however, that the program will continue longer and that the area can expect several lasting benefits.

Among such lasting benefits would be a more complete inventory of soils and a stimulation of business through greater farm prosperity in the area.

In a breakdown of estimated income increases, Mr. Tremblay said farmers could expect an increase of $550,000 from the native hay crop with proper fertilization. The county has 11,000 acres of native hay.

Other estimated increases are $225,000 on irrigated pasture; $265,000 on alfalfa; $417,000 on grains, and $76,000 on potatoes. With proper fertilization, he said, wheat production could be raised seven to 10 bushels to the acre, on the average.

A goal of 1,200 soil samples, or the equivalent of one from every farm in the county, has been set for the campaign. Walt Mauritson, county extension agent, said his soil testing laboratory will be operated 24 hours a day during the period.

Among those helping will be 600 county 4-H members, 700 members of the local FFA chapter and 750 women in home demonstration clubs, Mr. Mauritson said.

Also expected to cooperate in promoting the program are local business firms which will stress the importance of fertilization in their advertising.

In a discussion period, Jim Gustin of Kalispell said this program will not aggravate the surplus problem. Locally, he said, it will increase the production of good milling wheat currently in demand.

He also pointed out that there is no surplus of feed grain in the county and that very little is being shipped out.

In connection with the soil fertility program, fertilizer dealers attended a special school conducted by the Montana extension service to inform them of the program and alert them to the need for special services to help put the program over.

FDA Inspector Warns North Carolina Farmers

RALEIGH, N.C. — North Carolina farmers are being cautioned before the production season begins to be careful and accurate in their application of chemicals this year for control of weeds, insects and diseases in crops.

"Inspections will be made this year as in the past to make sure that vegetables and berries produced in North Carolina do not carry too much residual of chemicals which can be harmful to consumers," said William H. Phillips, inspector with the U.S. Food and Drug Administration, who works out of Baltimore.

"Producers should heed the warning which was given last year through the experience of the cranberry industry when a portion of the cranberry crop was seized because of improper use of a particular chemical," Mr. Phillips explained.

"We are trying to prevent anything such as the cranberry situation from happening again," he continued. "Therefore, we are urging farmers to be careful in their application of all chemicals on their produce."

Mr. Phillips urged all farmers to read labels on packages containing the various chemicals and to follow instructions. It was pointed out that under the law the proper application time and dosage are printed on the bags containing chemicals which are used for weed, insect and disease control.

"If instructions governing applications are followed," he emphasized, "there will be no trouble. All of the produce will measure up to regulations.

"In strawberries, as one example," he continued, "it is recommended that parathion not be used within 14 days of harvest. If the chemical is applied, for example, within seven days of harvest, too much of the chemical will be on the berries at harvest and thus stand a chance of being rejected by the U.S. Food and Drug Administration.

"Stress is placed upon the fact that if one lot of North Carolina strawberries or cucumbers or any other vegetable or fruit is rejected because of improper application of a chemical, sale of the entire crop from North Carolina may be affected.

"We are doing everything we can to prevent any seizures of farm produce in North Carolina," Mr. Phillips declared, "but in order for this to be done, we must have the cooperation of producers."

Iowa State Agronomist Dies Following Stroke

AMES, IOWA—Bruce J. Firkins, 64, died March 19 at the Mary Greely Hospital here, following a stroke suffered earlier the same day.

Mr. Firkins was a graduate of Iowa State University and received his master's degree in 1918. He joined the Iowa State agronomy department staff in 1919.

He was a former football, baseball and wrestling letter winner while a student, and later became widely known as a golfer.

He was a professor of agronomy at the time of his death.

MOBILE LABORATORIES REQUESTED

TALLAHASSEE, FLA.—A committee is studying a request for $77,875 in emergency funds made to the Florida State Agriculture Department by the state's fruit and vegetable growers, for two mobile laboratories to check pesticides on food crops in Florida.

Lee Thompson, assistant to Nathan Mayo, State Agriculture Commissioner, said the growers have been panicky since last fall when the U.S. Department of Agriculture refused to allow some cranberries from other areas to move into the market because of pesticide residues. Mr. Thompson said that Florida growers wanted to be sure similar circumstances do not develop with respect to their products.

Hercules to Expand Aid-to-Education Plan

WILMINGTON, DEL.—An expansion of Hercules Powder Co.'s aid-to-education program, to provide matching contributions by the company for every dollar given to colleges by Hercules employees, has been announced.

Under the new "matching grants" program, the company will equal, dollar for dollar, contributions made by its employees and retired employees to any accredited college or university, up to a maximum of $1,000 for each employee in any calendar year.

"No college graduate fully pays for his education during his years in school," Albert E. Forster, president and board chairman of Hercules, said in announcing the new program.

"As each graduate progresses in his vocation, his success must be attributed partly to the quality of his training. By that premise, an alumnus owes some of the financial reward he earns to the educational institutions which helped develop his capacity for his work," Mr. Forster stated.

Recently, Hercules announced the distribution of $110,000 to some 20 colleges and universities as unrestricted grants in aid for the current school year. This is the fifth consecutive year for this program, which is directed largely toward schools of science and engineering.

The primary purpose of the new matching-grants program is to broaden the base of the company's aid to education, Mr. Forster said, adding that: "It will permit us to give support to the vital liberal arts programs, as well as to science and engineering schools. It will enable us to give some support to schools which cannot be included under our present program. This we feel is best done through contributions from our employees as individuals, with the choice of schools being left to individual preference."

Major Insect Damage To Forests Predicted

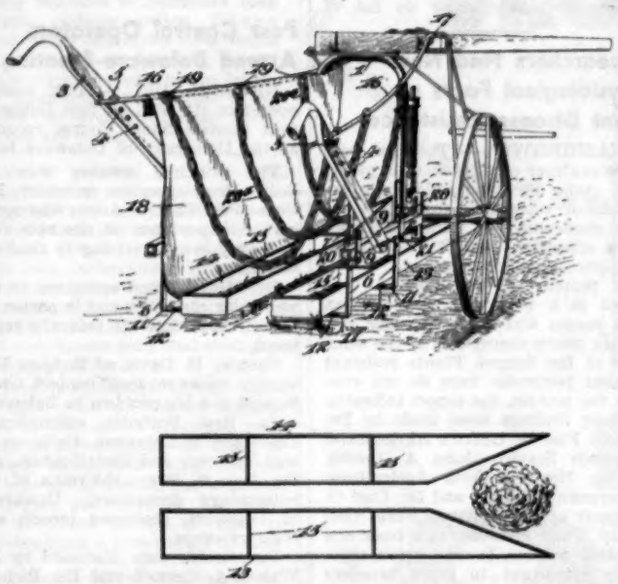
SAN FRANCISCO—Dr. Keith Arnold, director of the federal Pacific Southwest Forest and Range Experiment Station, told the California State Board of Forestry recently that catastrophic losses from insects appear to be in store for California forests. He said that timber losses may reach two billion board feet and that insect conditions of epidemic proportions exist in 10% of the state's commercial forests. He estimated the loss will be more than one third of the annual timber harvest.

Knox Marshall, chairman of the California Forest Pest Action Control Council supported Dr. Arnold's warning. He said that he will ask the state forestry board to approve zones of infestation so that state and federal pest control funds may be spent to

HELICOPTER APPLICATOR—California cotton growers, as well as farmers in other agricultural areas, have used helicopters for applying various pesticides and other chemicals to the crops. In the top photo, a Hiller helicopter applys defoliants to cotton. Makers of the craft say that the machine displaces 2 million cubic feet of air a minute to drive the spray downward, thus enveloping the bolls and foliage. Individual spray nozzles not needed may be turned off to coincide with skip row rotational planting. In lower photo, the craft pulls up for a tank load. The thousand gallon nurse rig keeps the solution of magnesium chlorate in constant agitation. The helicopter carries 125 gallons of the chemical.

Saga of Insect Control

Fig. 1.



JUST AS "cow catchers" on the front of locomotives were seldom successful in catching very many roving bovines, it is unlikely that the above "Boll-Weevil Catcher" ever made much of a dent in the over-all population of this cotton pest. At any rate, the device was granted a U.S. patent in 1904 to one Sanford V. Ivy of Texas.

He described the machine as having "certain new and useful improvements in boll-weevil catchers" and indicated that his device would "effectively catch and destroy boll-weevils or other insects or worms and remove from the growing cotton diseased or defective squares."

As shown in the above illustration, the device is basically a cultivator chassis with the invention attached. Simply, the rig, pushed by the operator through the cotton rows, had a funnel-like projection on the front which guided the cotton plant through a narrow slot on each side of which were pans containing kerosene or other suitable oil to destroy the insects as they dropped in.

The cultivator was equipped with dangling loops of chains "drawn or dragged over the tops, limbs, and body of the cotton stalks, knocking and shaking them in such a vigorous manner that all boll-weevils, insects, worms, and defective or diseased cotton squares are knocked off the cotton plants without injuring the plants." When the pans are full, the inventor says, the operator empties them in piles at the end of the row, soaks them with oil and lights the mass.

Dow to Permit Leave to Complete Ph.D. Studies

MIDLAND, MICH.—A fellowship program which will enable employees to take a leave of absence to obtain the Ph.D. degree has been set up by The Dow Chemical Co.

Under the program, the company will make several fellowships available to qualified employees each year. Interested employees may request a fellowship and leave of absence for the final year of work for the degree.

To qualify for a fellowship, the employee must indicate to the company that he has met language requirements for the Ph.D. degree, passed qualifying examinations admitting him as a doctoral candidate, been accepted by a professor for a definite thesis assignment and has a reasonable expectation of completing his work within one year of leave.

Candidates must have completed two years of Dow service, not including military or other leave, in order to apply. The program will be administered by a Committee on Graduate Assistance.

ARTICLES FILED

PHOENIX, ARIZ.—Articles of incorporation have been filed for Deltapine Seed Distributors, listing $1,000,000 capitalization to grow, process, experiment with, buy, sell both at wholesale and retail and act as brokers, jobbers and distributors for horticultural growths, farm and agricultural products. Incorporators-directors include Roma Foley, 1411 East Montecito, Scottsdale, and Ann Miller.

A. N. White — Harold W. Dube

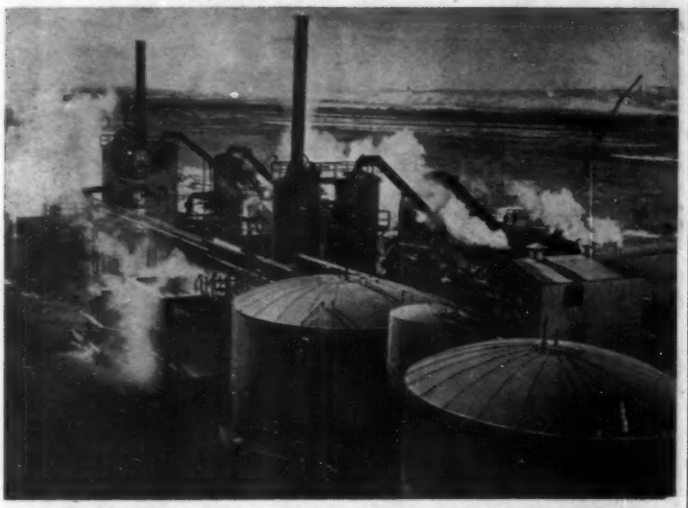
Hayes-Sammons Advances Two Salesmen

MISSION, TEXAS—Hayes-Sammons Chemical Co. has announced the promotion of two long-time employees, A. N. "Andy" White and Harold W. Dube, according to Clay Brazeal, vice president.

Mr. White has been named general sales manager of all Hayes-Sammons companies. Mr. Dube becomes general manager of the Dixie Division at Indianola, Miss., replacing Mr. White.

Mr. White joined Hayes-Sammons in February, 1953. He has worked as a sales representative and in the Mission, Texas, office. In 1956, when it was decided to open the Indianola plant, Mr. White was chosen to oversee construction and then became its general manager. Mr. White is a graduate of Texas A&M College.

Mr. Dube has been with Hayes-Sammons since 1955 when he joined the sales department. He is also a graduate of Texas A&M College, where he was named a distinguished student.



NEW SULFURIC ACID PLANT—Above is new sulfuric acid manufacturing plant at Riverton, Wyoming, which doubles the production capacity of Susquehanna Western, Inc., Denver subsidiary of the Susquehanna Corp., Chicago. The new unit, second to be operated by the company, expands production capacity to 75,000 tons a year of acid. The company's first sulfuric operations were launched in December, 1958, also at Riverton. The company is Wyoming's only sulfuric acid manufacturer. Acid is produced through the burning of pure sulfur and conversion of the gases. Sulfur is obtained from local Wyoming suppliers who recover it from sour natural gas.

Charles H. Sommer Elected President Of Monsanto

ST. LOUIS — Charles H. Sommer was elected president of Monsanto Chemical Co. and Charles Allen Thomas was elected chairman of the board of directors at the regular meeting of the board, following the company's 58th annual meeting. Mr. Thomas had been president, and Mr. Sommer had been executive vice president.

The board also elected Mr. Sommer chairman of the executive committee and a member of the finance committee.

At the board meeting, Edgar M. Queeny was re-elected chairman of the finance committee. He also remains a board member and a member of the executive committee.

All other officers were re-elected.

Mr. Sommer, who is 49 years of age, was elected to the executive vice presidency and board in June, 1959. He had been a vice president since 1954 and had served as general manager of the organic chemicals division for five years and general manager of the former Merrimac division at Everett, Mass., from 1951 to 1954. He has been with Monsanto since 1934.

Prior to his election as president, Mr. Thomas had served for four years as executive vice president. He has been a board member since 1942 and chairman of the executive committee since 1949. He will remain a member of the executive committee and finance committee.

Mr. Queeny, son of the late John Francis Queeny who founded Monsanto in 1901, has been associated with the company since 1919. He was elected president in 1928. In his annual meeting remarks, he noted that in the year prior to the time he took over as president, 1927, consolidated Monsanto had 919 employees compared to 31,346 today; and "sales then were $6.6 millions, versus last year's $811 millions; assets, $8.5 millions compared to last year's $951 millions—and by the end of the year we may have climbed into the billion-dollar club."

At the annual meeting, shareowners re-elected 10 members of the board of directors. They are Mr. Queeny, Mr. Thomas, Mr. Sommer, John L. Gillis, Carroll A. Hochwalt, William W. Schneider and Felix N. Williams, all of St. Louis; Herbert Hoover, Jr. of Los Angeles; Trueman M. Martin of El Dorado, Ark.; and Alan H. Temple of New York.

The shareowners voted to increase the authorized common stock of the company from 25,000,000 to 35,000,000 $2-par-value shares. They also approved establishment of a 1960 stock option plan for officers and key employees. The plan supplants the 1951 option plan amended in 1955 and due to expire in July of 1960. It will permit management to grant options for up to 350,000 shares of common stock.

Also approved by shareowners was a second employees' stock plan, but there are no present plans to put it into effect. The plan, which could be activated at the discretion of the board, would make available 450,000 shares of common stock to employees not included in the executive option plan. Eligible employees would be given the opportunity to purchase stock through payroll deductions at 95% of the average selling price quoted on the New York Stock Exchange on the date the plan becomes effective. The number of shares optioned to each employee would be computed on the number of whole shares which, at the option price, would equal 30% of his annual base compensation.

Decision Against MH-30 Not Final, Spokesman Says

NEW YORK — "Despite public statements to the contrary, maleic hydrazide remains a valuable material for the North Carolina tobacco grower," it was stated by Dr. H. Douglas Tate, manager of agricultural chemical research and development for the Naugatuck Chemical division, United States Rubber Co.

A recent statement by tobacco scientists of North Carolina State University that the chemical could not be officially recommended this season, was incorrectly interpreted as a final decision on the chemical, Dr. Tate said.

"The university is currently engaged in long-term tests on maleic hydrazide, or 'MH-30,' and until these tests are completed cannot give official recommendation on this chemical," Dr. Tate said.

"However, it is our opinion that data already developed in these tests, which have been shown to us by the state scientists, indicate that MH-30 will continue to be a helpful chemical to the tobacco grower."

Dr. Tate added that Naugatuck Chemical will continue to recommend that tobacco growers who decide to use MH-30 should follow instructions closely and fit the chemical into their growing schedules according to their needs and farming conditions.

North Carolina Officials Urge Farmers to Halt Crotalaria Plantings as Cover Crop

RALEIGH, N.C.—A resolution urging farmers to stop planting crotalaria, a crop now grown extensively for soil conservation and improvement, has been adopted (unanimously) by the heads of a number of North Carolina farm agencies.

The resolution was passed after State College officials called the agricultural leaders together and showed them recent research information on the crop.

A spokesman said the research showed that crotalaria in any form or amount can be extremely harmful to poultry and livestock.

Evidence also was presented to show that with present grain harvesting procedures, it is almost impossible to keep poultry and livestock feed free of crotalaria seed as long as the crop is being grown.

"Therefore," one source asserted, "farm leaders felt it is best for the crop not to be grown at all in North Carolina."

Those supporting the resolution included L. Y. Ballentine, agriculture commissioner; A. C. Edwards, executive vice president of the North Carolina Farm Bureau; Harry Caldwell, master of the State Grange; Sidney Britt, chairman of the North Carolina Grain Commission; R. M. Dailey, head of the State Soil Conservation Service; H. V. Mangum, chief, ACP Division, State ASC office; Arthur Upshaw, president of the North Carolina Feed Manufacturers Assn.; T. C. Flood, president of the Grain and Feed Dealers Assn.; and R. W. Shoffner, assistant director, N.C. agricultural extension service.

As noted, the farm leaders also asked the ASC State Committee to remove crotalaria from its list of recommended soil improvement crops.

"In the past," one informed source here commented, "about 30,000 acres of crotalaria have been planted each year in North Carolina under agricultural conservation programs. Many more acres are planted by farmers on an individual basis. And since crotalaria will voluntarily grow several years after planting, thousands of additional acres of land have some of the plants.

"As long as North Carolina's corn crop was gathered by hand or by the snapper-type mechanical pickers, researchers say contamination by crotalaria seed was not a problem.

"With the advent, however, of newer-type, picker-sheller harvesters seeds are being gathered with the grain.

"Representatives of the grain trade attending the meeting said it was necessary for them to refuse some corn last fall because of contamination by crotalaria seed. Dealers are expected to crack down even more severely this fall."

A number of scientists for the North Carolina Agricultural Experiment Station attended the meeting and presented evidence of the crop's harmful effects on poultry and livestock.

Dr. Roy L. Lovvorn, director of the station, said that scientists with the South Carolina Agricultural Experiment Station were getting the same results as North Carolina scientists.

In urging that crotalaria not be planted, the farm leaders emphasized that they realized "there is no satisfactory substitue in sight for the crop . . . on extremely sandy soil . . ."

Researchers Find New Physiological Facts on Plant Disease Resistance

WASHINGTON — The first concrete evidence of substances in plants that make them physiologically resistant or susceptible to disease has been uncovered by a team of Federal-State scientists, the U.S. Department of Agriculture has reported.

A protein of the globulin type found in a particular race of flax rust fungus was found to occur also in flax plants susceptible to the same race of the fungus. Plants resistant to that particular race do not contain the protein, the report indicates.

These findings were made by Dr. Harold Flor of USDA's Agricultural Research Service, John A. Doubly of the North Dakota Agricultural Experiment Station, and Dr. Carl O. Claggett of Pennsylvania State Univerity. Their discovery is a basic one in plant science. It may prove especially important to plant breeders searching for disease-resistant plant material. Disease resistance is a primary objective in the development of almost all new crop varieties.

Physiological resistance to disease is inherent in the genetic make-up of some plants. It is often observed but not yet understood by scientists. When cells of such resistant plants are invaded by a disease organism, these cells and some of those around them die. This causes the death of the invading pathogen, so the disease does not spread. Physiological disease resistance in plants differs from structural resistance, in which movement of the disease pathogen is prevented by the plant's cuticle or by cell walls.

Globulins from each of four lines of flax and four races of the rust fungus Melampsora lini were used in serological analyses by the scientists. The four flax lines differed from each other only in their inherited resistance or susceptibility, and the rust races differed only in their ability to produce disease in the flax.

Pest Control Operators Attend Delaware Meeting

NEWARK, DEL. — Pest control operators attended the first Delaware Pest Control Short Course recently at the University of Delaware here.

The principal speaker was Dr. Ralph Heal, executive secretary, National Pest Control Assn., who spoke on the importance of the new food and drug law pertaining to food additives.

Dr. Heal warned operators to use pesticides correctly, and in particular to use those that are federally registered.

Spencer H. Davis, of Rutgers University, spoke on mold control, which he said is a big problem in Delaware.

Dr. Paul Burbutis, entomologist, University of Delaware, spoke on insect anatomy and identification, and Dr. Dale F. Bray, chairman of the entomology department, University of Delaware, discussed insects and their relatives.

Insecticides were discussed by Dr. Walter A. Connell and Dr. Richard F. Darsie, both of the University of Delaware.

U.S. TO COMPENSATE CRANBERRY GROWERS

WASHINGTON—Cranberry growers who suffered great losses last fall because of the aminotriazole residue scare are to receive compensation from the Federal government in the amount of $10 million, the White House announced March 30. This amount will give the growers approximately $8 a barrel compared with $12 they would probably have received on the normal market.

The growers had originally asked for up to $20 million compensation not only for the 1959 crop but also for losses they expect to feel during the 1960 season. Payments will not be made to growers whose berries were found to be contaminated, a government spokesman said.

Not A Carcinogen . . .

Aminotriazole Put in New Medical Role To Benefit Man as Antithyroid Product

BOSTON, MASS. — A defense of aminotriazole as being of medicinal benefit rather than the carcinogenic villain pictured by the Department of Health, Education and Welfare in the recent cranberry episode, was made by a Boston physician, Dr. E. B. Astwood, in a recent issue of the "Journal of the American Medical Assn." Dr. Astwood termed aminotriazole an "efficient weed killer and a good antithyroid compound" and had some interesting observations to make on the material as a medicinal and its results in treatment of human beings.

The doctor called it "misleading" to say that an antithyroid compound such as aminotriazole is a carcinogen "because this term brings to mind locally acting chronic irritants such as coal tar, which, when painted on the skin of animals induces epidermoid carcinoma, and soot, which is more carcinogenic than charcoal . . . The so-called carcinogenic action of aminotriazole and related compounds in rats results entirely from the antithyroid effect."

Dr. Astwood builds up an interesting case to prove his point. This antithyroid action, he said, inhibits synthesis of thyroid hormone, induces profound hypothyroidism and evokes excessive secretion from the pituitary.

"It is this intense thyrotropic stimulus that causes goiter, and, if the stimulus is continued long enough, nodular goiter. These glands have sometimes been found asociated with nodules of hyperplastic thyroid tissue in the lungs. The implication of metastasis is the reason for suggesting that these nodules are cancers.

"Thyroid nodules of this type, usually labeled cancers by the investigators who have studied them, have been induced in rats or mice by several experimental maneuvers which lead to excessive thyrotropic stimulation: iodine-deficient diet, partial destruction of the thyroid by radioiodine, feeding with one or another antithyroid drug, and even partial thyroidectomy.

"These experiments clearly show that there is no unique carcinogenic action of any one antithyroid compound. It is important, too, that no known antithyroid compound has ever been implicated in the induction of cancers elsewhere in the body, even when fed to rats or mice in large doses for a long period of time.

"In order to be designated as carcinoma, thyroid nodules would have to grow autonomously, but no one has yet succeeded in producing such a nodule. When the goitrogenic influence of excessive thyrotropic stimulation is relieved, the nodules regress. This result may be achieved by removing the antithyroid compound from the diet, by giving iodine to iodine-deficient animals, or by giving thyroid hormone in any of the experimental designs.

"One exception to this generalization is a most interesting type of benign nodule, designated as type γ and described by Isler and Leblond, which apparently is accelerated in growth when iodine is given to animals raised on a diet low in iodine. Autonomous carcinoma of the thyroid has been induced only by serial transplantation of thyroid tissue through several generations of thyroid-deficient animals.

"The animal experiments forming the basis of the conclusion that aminotriazole causes carcinoma of the thyroid have not been published and are not accessible for evaluation. Apparently they were not extensive and thyroid deficiency was not taken into account and corrected by supplement of thyroid hormone. No antithyroid drug yet studied leads to thyroid enlargement of nodular goiter when thyroid deficiency is prevented.

"Several antithyroid drugs, thiouracil, mercaptoimidazole, and derivatives thereof, have been widely used in the treatment of hyperthyroidism in the past 17 years, and no instance of the induction of carcinoma has been encountered.

"The doses used for this purpose were much larger than the quantity of aminotriazole that would derive from the most highly contaminated cranberries. Still larger doses would be needed in man to reproduce thyroid changes comparable to those induced in rats, and presumably dosage would have to be continued for most of a lifetime.

"Meanwhile, a progressively enlarging goiter would make its appearance, the subject would lapse into profound myxedema, and the execution of the experiment would be intolerable. It seems inconceivable, therefore, that an antithyroid compound, no matter how potent and however prevalent in food, could ever lead to the development of the sort of thyroid nodules elicited in rats.

Turnip Carcinogens?

"In 1949 it was shown that the edible portions of certain vegetables of the mustard family, notably the rutabaga or yellow turnip and the seeds of many others, yielded on extraction L-5-vinyl-2-thiooxazolidone, an antithyroid compound accounting for the goitrogenicity of these foods.

"A rough estimate, based on insufficient data, would suggest that these Swedish turnips may be 100 times as potent as cranberries 'badly contaminated' with aminotriazole. The reason for studying these foodstuffs was to determine whether they played a part in the mysterious prevalence of goiter in regions where iodine deficiency was not a cause.

"In spite of continuing inquiry for several years, I have not been able to trace a single instance of even simple goiter to the excessive ingestion of vegetables such as the rutabaga. It is also of interest that among the first means of inducing the growth of nodules in the thyroids of rats was the feeding of a diet made up of corn meal and rolled oats supplemented with calcium chloride and a mixed diet containing rape seed, which was more effective. The lesion has since been induced by the incorporation in the diet of thiourea, thiouracil, meth-

(Turn to BENEFITS, page 20)

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PATENTS and TRADEMARKS

2,929,700

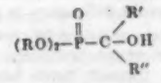
Composition and Method of Correcting Nutrient Deficiency in Plants. Patent issued March 22, 1960, to James P. Bennett, Lafayette, Cal. A process for treating growing-in-soil plants deficient in at least one nutrient metal selected from the group consisting of iron, zinc, copper, manganese and molybdenum, which comprises applying to the plant a mixture consisting essentially of: (a) at least one of said deficient nutrient metals in readily available form, and (b) as a toxicity reducing agent for such nutrient metal the constituents of sulfite pulping spent liquor.

2,929,760

Insecticidal Composition Comprising Pyrethrins and Octachlorodipropylether. Patent issued March 22, 1960, to Friedrich Becke, Bad Duerkheim, Heinrich Sperber, Ludwigshafen (Rhine), Herbert Stummeyer, Mannheim, and Henrich Adolphi, Limburgerhof, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany. An insecticidal composition comprising pyrethrins and, as a synergist, 2,3,3,3,2',3',3',3'-octachlorodipropylether.

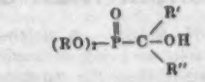
2,929,759

Fluoro-Substituted Phosphonic Ester Pesticides. Patent issued March 22, 1960, to Everett E. Gilbert, Morris Township, Morris County, Julian A. Otto, Lake Tamarack, and John J. Donleavy, North Caldwell, N.J., assignors to Allied Chemical Corp. Insecticidal and miticidal compositions comprising a fluoro-substituted phosphonic ester having the following general formula:



wherein R is an alkyl radical containing from 1 to 4 carbon atoms, R' is a member of the group consisting of methyl, fluoromethyl and phenyl radicals and R" is a fluoroalkyl radical containing from 1 to 3 carbon atoms, together with a carrier therefor.

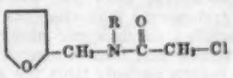
The process of combatting insect and mite pests which comprises exposing said pests to a fluoro-substituted phosphonic ester having the following general formula:



wherein R is an alkyl radical containing from 1 to 4 carbon atoms, R' is a member of the group consisting of methyl, fluoromethyl and phenyl radicals and R" is a fluoroalkyl radical containing from 1 to 3 carbon atoms.

2,929,702

Herbicidal Use of Alpha-Chloroacetamides Having Heterocyclic Substituents on the Amide Nitrogen. Patent issued March 22, 1960, to Angelo J. Speziale, Kirkwood, Mo., assignor to Monsanto Chemical Co., St. Louis. The method of selectively inhibiting the germination and preemergent growth of grasses from seeds in contact with soil which comprises treating the said soil with a herbicidal amount consisting of from one to 15 pounds per acre of the compound having the structure:



wherein R is an aliphatic hydrocarbon having up to six carbon atoms.

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by

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The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 26.1 to 26.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

N-1, for insect repellent. Filed Dec. 22, 1958, by The Silicote Corp., Oshkosh, Wis. First use Nov. 24, 1958.

Electrolux, in script letters, for insecticides and room deodorants. Filed Jan. 5, 1958, by Electrolux Corp., New York. First use March 25, 1947.

Dianol, in capital letters, for insecticide and rodenticide. Filed April 10, 1959, by Mills-Pearson Corp., St. Petersburg, Fla.

Dixieland, in heavy capital letters, for agricultural chemical pesticides. Filed May 7, 1959, by Albany Chemical Co., Albany, Ga. First use Jan. 5, 1959.

Desert Green, in capital letters, for organic lawn and garden fertilizer. Filed Feb. 4, 1957, by Desert Green Corp., Albuquerque, N.M., assignee of David A. Gaunt, Albuquerque, N.M. First use, Sept. 28, 1955.

Concentrace, in capital letters, for concentrated plant food. Filed June 22, 1959, by United International Research, Inc., Long Island City, N.Y. First use, Feb. 24, 1959.

Fertie, in capital letters, for packaged fertilizer products. Filed Oct. 12, 1959, by Organic Compost Corp., Germantown, Wis. First use July 1, 1959.

Elected to Board

LOS ANGELES—Frederic B. Adams, Jr., director of the Pierpont Morgan Library at New York since 1948, was elected a member of the American Potash & Chemical Corp. board of directors recently.

Prior to accepting the directorship of the Morgan Library, the new member of the board had been associated with Air Reduction Co. for 15 years. Mr. Adams, who resides with his family at Princeton, N.J., graduated from Yale University in 1932.

JOINS DIAMOND

CLEVELAND, OHIO—Albert DiDario has joined Diamond Alkali Co. as biologist, agricultural chemicals, at Painesville, Ohio. He formerly was connected with The Oliver Corporation as entomologist.

The Impact of FDA Regulations on Research and Living Standards

By Dr. Earl L. Butz
Purdue University

EDITOR'S NOTE: Dr. Earl L. Butz is dean of agriculture at Purdue University, Lafayette, Ind., and is a former assistant secretary of agriculture. The accompanying article is from a talk by Dr. Butz at the Grain & Feed Dealers National Assn. convention in Kansas City.

Although the whole agricultural industry has long been heavily involved with a wide variety of governmental regulations, seldom has any single regulation evoked as much controversy as that growing out of the Delaney Section of the Food Additives Amendment of 1958. First the cranberry episode last fall, followed closely by the chicken fiasco, provoked most of us into "taking sides" on one or more phases of the issue. There just wasn't much "middle ground" on which interested parties could establish a foothold.

Many of the articles written and speeches made generated more heat than light. Reason is seldom advanced when emotionalism and anger take over.

It is now clear, in retrospect, that grievous mistakes have been made by both sides in the running argument over feed additive regulation. At this juncture, however, no useful purpose is served by the protagonists merely whipping each other over past mistakes. We must all avoid a repetition of costly mistakes. We must build on our errors so as to assure the safest possible food supply for all our people consistent with our fundamental need for an adequate flow of food and fiber produced and distributed with ever increasing efficiency.

No one argues the absolute necessity for health protection in our foods. Our food supply in the U.S. is now the safest, cleanest and most wholesome in the world. It is the responsibility of all of us to keep it this way.

Just as there is no room for complacency in safeguarding our food supply, neither should there be any quarter for emotionalism and sensationalism. One of the grievous mistakes made in recent months has been the trial of certain sectors of agriculture by sensational news releases and conviction by carefully staged press conferences. Needless damage has been done to important agriculture enterprises, if not to the whole food industry. Millions of consumers have drawn the inference that some food producers and processors are "kind of a culprit," trying to pull a fast one on consumers. This attitude often reflects unfavorably on the whole food industry, when as a matter of fact consumers should be eternally grateful for the tremendous job our food industry is doing in placing before them an adequate and varied supply of wholesome foods at ever declining relative costs.

LEGISLATION MAY NEED REVISION—Considerable argument has centered around the "zero tolerance" feature of the Delaney Section of the Food Additives Amendment. This particular feature needs amendment. The concept of "zero tolerance" is inconsistent with generally accepted practice throughout nearly all phases of our way of living.

When one becomes ill and consults his physician, he frequently obtains a prescription for drugs which would be lethal if not administered within carefully prescribed tolerance limits. The human body itself carries a number of poison chemicals, again within safe tolerance limits. Even in the manufacture of a carefully engineered product like, let us say an automobile motor, tolerance limits are established, for example, for clearance between the piston and the cylinder. Management has evolved a system of quality control in manufacturing to keep variability of individual parts within carefully prescribed limits. If industry had to operate under a philosophy of zero tolerance of variability of individual parts, manufacturing costs would be so high that many of the ordinary gadgets we now enjoy would be impractical if not impossible.

We can draw a lesson from this in the current case. We need to establish by careful and painstaking research the conditions under which chemicals may safely be used in food production or as feed additives. By the same token, we need to establish by research on residues the tolerance limits below which no harm results and above which danger lurks.

Likewise, we must stop tossing about the cancer scare in a loose and irresponsible manner. The cranberry incident of last fall was most unfortunate. It was both confusing and frightening. The mental association of chemicals, cancer and cranberries is firmly fixed in the minds of millions of consumers for many years to come. Irreparable and needless damage has been done to a whole industry. If an individual has to eat 15 tons of aminotriazole-treated cranberries before he would become subject to carcinogenic influences, or even one ton for that matter, we should know what the facts are. These can be established through research. Safe tolerance limits can be established. There will be no need to grow panicky and take precipitous action over the presence of residues so minute as to be completely harmless. In this respect, legislation now on the books is at fault. Zero tolerance negates the very concept of tolerance. The law should be amended.

LET'S NOT MOVE BACKWARDS—There are many things in our everyday life that have induced cancer in animals. These include sunlight, fats and sugars for laboratory animals under special circumstances. If we eliminate from our lives everything that might cause cancer in animals, our twentieth century civilization as we know it in America would be impossible. Darkness and hunger and nakedness would be the order of the day. Yet existing law contains a flat prohibition against the use of substances which in food or feed can be made to induce cancer in men or animals.

In adopting the Delaney amendment, Congress was obviously making a very sincere effort to write a law that would protect the health and welfare of the people of the U.S. With this objective, no one can quarrel. However, it is difficult to believe that Congress intended this legislation to prevent the use of products which would be safe when used in regulated amounts and under proper conditions, particularly when the use of such chemicals is clearly to the mutual advantage of producer and consumer in the form of higher quality and more adequate foodstuffs at ever more reasonable prices.

Modern agriculture cannot continue to produce adequate amounts of safe and wholesome food without chemicals. If we were seriously to curtail their use on farms and in the food industry, we would immediately experience a decline in the quantity and over-all quality of our food supply. Consumers would quickly experience a rapid rise in food prices, and consequently would have much less to spend for all the other things that go into the fabulous American standard of living.

There is nothing new about the use of chemicals in foods. We have been doing it ever since some cave man discovered centuries ago that salt would preserve meat. Likewise, we have been using chemicals in food production for a long while. The efficiency with which we use them has advanced a great deal beyond the practice of the early American Indian who planted a fish with every hill of maize, but the principle is not greatly changed.

WE MUST NOT THROTTLE RESEARCH—Consumers, as well as farmers and the food industry, have a vital stake in an efficient and progressive agriculture. This includes the safe use of chemicals in food production, and the research and regulatory programs of our federal and state governments that assure wholesome foods in continuing abundance at economical prices.

We must exercise extreme caution in administration of regulatory programs that we do not stifle advances in agricultural research.

It is almost axiomatic among research directors that research scientists rapidly lose their zest for innovation and discovery if they know, or even suspect, that any discovery they make may be buried either as the result of company policy or of legal restraint. It is obviously in the interest of more efficient production and distribution of food and food products to unleash research scientists and research organizations, wherever they may be, to work in the broad area of increased efficiency of food production and distribution.

In the modern world this necessarily involves research in chemicals on a broad front. Yet there is evidence that in recent months some pharmaceutical manufacturing concerns and some chemical companies have de-emphasized research in the broad area of feed additives, particularly those containing arsenicals or estrogens. Top management of some companies, noting that the burden of proof is shifted to the manufacturer to demonstrate complete absence of carcinogenic properties, feel that there are easier opportunities for manufacturing profit in fields other than feed additives, and are quietly redirecting research emphasis in their laboratories.

From purely a selfish point of view, management may be right in making such decisions. Chemical and pharmaceutical research is costly. If a company must add to the cost of discovery and development the additional burden and delay of proving complete absence of substances which can induce cancer, even in such small

Dr. Earl L. Butz

Dr. Butz Comments:

- **"One of the grievous mistakes has been the trial of certain sectors of agriculture by sensational news releases and conviction by carefully staged press conferences.**
- **"The 'zero tolerance' feature of the Delaney section needs amendment. The concept of 'zero tolerance' is inconsistent with generally accepted practice throughout nearly all phases of our way of living.**
- **"If we eliminated from our lives everything that might cause cancer in animals, our 20th century civilization as we know it in America would be impossible.**
- **"Modern agriculture cannot continue to produce adequate amounts of safe and wholesome foods without chemicals.**
- **"We must exercise extreme caution in administration of regulatory programs that we do not stifle advances in agricultural research. . . . It is small wonder that the current philosophy of law enforcement discourages research and innovation.**
- **"We don't apply the 'no tolerance' rule to swimming pools or automobiles just because somebody might misuse them.**
- **"Let industry, government and colleges undertake research to establish safe practices for use (of feed additives) and to define tolerance limits for residues below which there is no toxic effect. Then industry, government and extension services should launch an educational program to insure maximum compliance.**
- **"The dual objectives of (1) a safe and healthful food supply and (2) use of every scientific aid to produce and process food more efficiently are not in conflict. They are completely compatible and attainable if sensible and determined men can set themselves diligently to the task in an atmosphere of scientific objectivity."**

quantities as to be clearly non-toxic, it is small wonder that the current philosophy of law enforcement discourages research and innovation.

In our contemporary society, we should encourage research and innovation by every possible means—never discourage it. The whole American society is built upon the cornerstone of a productive and highly efficient agriculture.

SCIENTIFIC AGRICULTURE IS BASIC FOR ALL OF US—Our modern scientific agriculture, based on research and technology, is so efficient that we now feed and clothe our entire population with only 11% of our people on farms.

The first claim of any society upon the total production resources is to get enough food to keep the population alive. This is true in primitive societies, in semi-developed societies and in highly developed societies. We do this so efficiently in this country that almost nine-tenths of our population is available to produce the wide variety of goods and services that make up the fabulous American standard of living.

Today the average American farm worker produces enough food and fiber for himself and 25 others. A generation ago, in 1930, he produced enough for himself and only nine others. A century previously, in 1830, one farm worker could produce enough for himself and three others.

This striking record of increased efficiency in U.S. agricultural production has been made possible only through the advances of research on a broad front, involving many disciplines and numerous techniques. The research programs of private industries like the chemical and pharmaceutical manufacturing companies, the feed manufacturing companies, of the colleges and of the government have all been synchronized into one complex whole which we know as modern agriculture.

The productivity of our farmers and ranchers has grown twice as fast as the productivity of workers in industry. Since 1950, output per man hour in non-agricultural industry has risen at the rate of 2% per year. The increase in output per man hour in agriculture has averaged 5% per year. This has resulted from such things as increased mechanization, superior breeds and varieties, and not the least important, a tremendous increase in the use of chemicals and pharmaceuticals.

We have come a long way from the "good old days" when the farmer planted:

"One for the mole, one for the crow,
One for the blight, and two to grow."

Today's farmer just doesn't do that, and tomorrow's isn't going to do it either. The use of chemicals is a principal reason for America's abundance of food and fiber.

Both land and animals have been made much more productive in the decade just closed. There are over 60 million beef cattle and calves on the same pastures and range lands that in 1939 supported only 30 million head. We have doubled our output of beef in this country in the last three decades. This means that beef consumption per person rose from 57 lb. in the 1920's to 75 lb. for an average in the 1950's. Numbers of cattle increased just about the same as numbers of population. Therefore, the increase in per capita consumption resulted from marked improvement in productivity of beef.

At the present time, there are about 4 million fewer dairy cows on U.S. farms than 20 years ago, but each cow produces on the average nine-tenths of a ton more milk.

For every two eggs a hen laid in 1939, today's hen is laying three.

The story of how we have more than doubled per capita consumption of chicken meat in the last 15 years is classic. The use of chemicals and pharmaceuticals completely revolutionized this industry, and has substantially made it possible for our good growers to produce 1 lb. of chicken meat with 2 lb. of feed. This is phenomenal in a biological industry. It was undreamed of just two decades ago.

There remains yet ahead of us a substantial area for quality improvement and cost reduction of our foodstuffs through the use of insecticides, herbicides, growth stimulators and regulators, antibiotics, arsenicals, estrogens and the like. Research is the vehicle that will extend the horizons of useful knowledge in these areas. All America will benefit.

Obviously, carefully prescribed regulations must be developed for the safe use of these products. The same is true of swimming pools and automobiles. Used improperly, both are lethal. Used properly, both are a great boon to contemporary civilization and to our standard of living. Yet we don't apply the "no tolerance" rule to them, just because some individuals might misuse them. We have evolved a broad system of rules for use, implemented by a sensible regulatory program, that works pretty well.

We can take a lesson from this in connection with the regulation of feed additives. Let the industry, the government and the colleges undertake research to establish safe practices for use and to define tolerance limits for residues below which there is no toxic effect. Once this is done, the industry, the government and the extension services in the various states should launch a broad educational program to insure maximum compliance with prescribed regulations. The industry itself should then pursue vigorously a self-policing program.

This will result in a minimum number of seizures and arbitrary regulatory actions by the Food and Drug Administration. After all, the success of a regulatory agency is not measured nearly so much by the number of prosecutions and convictions it obtains as by the extent of voluntary compliance with sensible and enforcable rules of the game.

TRACE LEVEL RESEARCH INSTITUTE—We have just established at Purdue University of Trace Level Research Institute for residues and metabolites. This institute has been set up to facilitate research involving levels of toxicity of residues from such things as food and animal feed additives, pesticides, pharmaceuticals, cosmetics, growth regulators and similar materials. The intent of the program is to encourage research workers and manufacturing establishments to pursue vigorously the development of new and more effective agents in these fields, while at the same time, encouraging the highest standards of human health and welfare.

A great future lies ahead of us on the frontier of research. While we sometimes marvel at the scientific advances of the 1950's in plant growth and livestock efficiency, it can be argued that we are just entering the Age of Science. We are just beginning to scratch the scientific frontier. This is a frontier that has no effective limit. It is limited only by the mind and imagination of man. Its horizons are vertical—not horizontal.

The research scientists working in the great laboratories of agricultural chemical and pharmaceutical plants will have a lot to do with shaping the future of agriculture. Research people everywhere recognize the job ahead will require the hardest kind of work. The easy questions have already been answered. Many of yesterday's research problems have been solved by relatively simple, straightforward and fairly obvious methods. Those that face us today are highly complex. We must continually search for new tools with sharper cutting edges, more potent materials and new ways of using them if we are to get the job done.

Organized and imaginative research is the vehicle which will push the scientific frontier beyond limits we scarcely dare dream of today. It follows logically, therefore, that if we can keep our economy free and preserve an environment in which individual producers and scientists are free to dream a little about new techniques and new ideas, and to enjoy the fruits of their dreams, we shall experience phenomenal progress in the next generation.

We must search diligently for a basis of common understanding among government regulators, research scientists and business executives so that we can meet the dual objectives of a safe and healthful food supply on the one hand, while at the same time availing ourselves of every scientific aid to produce, process and merchandise that food supply ever more efficiently and economically.

These dual objectives are not in conflict. They are completely compatible and attainable if sensible and determined men can set themselves diligently to the task in an atmosphere of scientific objectivity, unimpeded by such modern phenomena as the news release, the press conference and the congressional hearing.

Walter Bartz Reassigned To New York Location

NEW YORK—American Agricultural Chemical Co. has announced that it has relocated Walter Bartz, formerly accountant at Pierce, Fla. where the company's phosphate rock mines are located. Mr. Bartz will now be at the firm's home office in New York City. His new title will be special assistant to W. H. Hildebrandt, A.A.C.C. comptroller. Mr. Bartz will handle special assignments through the company's diverse activities in phosphate rock mining, and production of fertilizers and other chemical products. Replacing Mr. Bartz in his former position at Pierce, Fla., is J. M. Grant who has recently been appointed accountant, the company has announced.

Walter Bartz

California Farm Supply to Enter Insecticide Business

SAN FRANCISCO, CAL. — Approval has been given for the California Farm Supply Co., a Farm Bureau affiliate, to enter into the production of insecticides. Approval came at the company's annual meeting in Berkeley, when by resolution the some 50 stockholders attending called for the construction of a $135,000 plant and requested the board of directors to begin work immediately on an organization and financing plan. The directors later approved the idea.

Decision to enter into the production of this basic supply resulted from a recent study of the cost of insecticides to California farmers. The study revealed that a saving of from 20 to 25% could be effected through a cooperatively owned and operated insecticide plant.

Prior to the business portion of the annual meeting, progress reports were heard on the operations of the California Farm Supply Co. and the county farm supply companies.

L. A. Rozzoni, company president, reported that the company had operated at a profit in 1959, for the fourth consecutive year. And, he pointed out, gross sales for the past three months have been well ahead of the same period last year, giving 1960 an encouraging outlook.

Mr. Rozzoni announced that the CFS branches and the county farm supply companies are now distributing and applying fertilizers produced by the recently completed farmer-owned Valley Nitrogen Producers, Inc.

The CFS-El Centro branch, according to Mr. Rozzoni, started an anhydrous ammonia distribution and application service last year, offering a full range of services including ground injection.

NEW OWNERS

PHOENIX, ARIZ.—Grow Best Fertilizer Co., 1426 North 1st St., is now headed by Joseph C. Metzguer, F. V. Jenson, Walter Barber and Bernard Ross, according to the March 23 ownership transfer listings.

California Fruit, Vegetable Processors Meet; Consider Future Pesticide Use

BERKELEY, CAL.—Four hundred California fruit and vegetable processors and shippers met at the Claremont Hotel here in mid-March to consider plans to insure the proper use of only registered pesticides on fruit and vegetable crops. The conference was arranged by the Canners League of California, and joined in by the California Grape and Tree Fruit League, the California Freezers Assn., and the Dried Fruit Assn.

Carlos Cambell, executive secretary, and Dr. Ira Somers, director of research for the National Canners Assn., flew out from Washington to participate in the conference. Mr. Cambell declared that "we have no choice but to see that none of these prohibited materials get into our processed foods."

Dr. Somers made clear the responsibilities canners have to fully inform growers about pesticides and to keep track of the pesticides used by growers on crops for processing.

The conference had a three fold purpose: (1) To demonstrate that all segments of the industry are coordinating their efforts in alerting and informing growers on all phases of the problem; (2) to inform fieldmen more thoroughly about the present FDA requirements, and (3) to make clear to the consumer the determination of all segments of the industry to supply foods that are wholly safe.

Dr. Charles Townsend, of the National Canners Assn. Berkeley laboratory, was chairman of the formal program, during which Dr. Paul F. Sharp, director of the University of California Experiment Station, reported that recommended spray program leaflets have been prepared for about 30 crops. He said that the university had been carrying on studies in spray residues for 20 to 30 years, though its work has been inadequate to cope with the present situation. Dr. Sharp indicated that additional funds are being sought to expand the residue studies.

Willis C. Moore, H. J. Heinz Co., explained the Canners League of California program. Its two purposes are: (1) That no crop will be accepted for processing or shipment if treated with a material not registered for use on the crop, and (2) that use restrictions for which each pesticide is registered have been followed. He described the various information sheets, record sheets, and contract riders that have been prepared for canner use.

Thomas B. House, secretary-manager of the California Freezers Assn., and A. E. Thorpe, executive vice president of the Dried Fruit Assn. of California, said their organizations would follow the Canners League program closely.

Harold Angier, secretary-manager of the California Grape and Tree Fruit League, reported on the program of his organization to make certain that shippers do not get into pesticide residue difficulties.

SPECIAL MERCHANDISING SECTION

BETTER SELLING

MARKETING NEWS AND FEATURES

Soil Testing Laboratory Aids New Mexico Dealer

By JESS BLAIR
Special Croplife Writer

By adding a soil testing laboratory and offering a complete fertilization program, Melhlop & Son of Dexter, N.M., soon increased its annual fertilizer sales to $100,000. John Melhlop, the owner, derives most of his income from an alfalfa mill, feed store and insurance business, but fertilizers have become a double profit-maker.

First, he makes a legitimate profit on sales. Secondly, the use of fertilizer increases alfalfa yields, and Mr. Melhlop is one of the largest alfalfa hay dealers in the state.

"Our main purpose was to help alfalfa growers," he said, "but now we sell even more fertilizer to cotton farmers. To meet this outside competition, I added my own soils laboratory and do all the analyzing myself."

Mr. Melhlop found that many farmers thought a good crop rotation was all that was needed. Also some of them would take the word of an outside salesman and buy more than they needed.

"That was one handicap we faced," said the company owner. "The second was that I had lived here all my life. You know, some people will listen to a smooth-talking stranger quicker than they will a hometown boy. But I knew they would accept figures, so the soils laboratory was used so we could make accurate recommendations, and for a rather small investment, too."

He had graduated from New Mexico State University with a degree in chemical engineering, and this enabled him to do his own work and devise his own formulas.

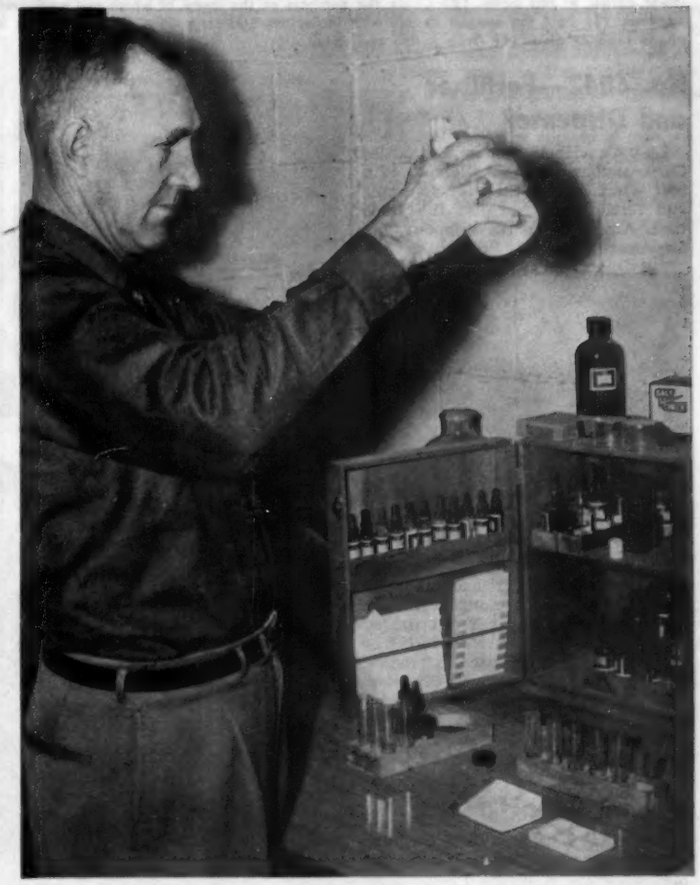
"After analyzing the soil samples from a farm," he said, "I would recommend a higher analysis fertilizer. One that we started using is ammonium phosphate because of the high pH of these calcareous soils. Farmers are often skeptical, so we began to keep records on crops."

One example was where a soil test indicated phosphorus deficiency, and Mr. Melhlop recommended 200 lb. per acre of 11-48-0. The farmer was growing cotton, and harvested a bumper three bales per acre, which was almost a record yield. Next year he wanted to buy the same amount, but was told there might be some phosphate carryover. Mr. Melhlop ran a second soil test, found this was true, and sold the farmer a lesser amount without lowering the yield the next crop.

"It is suicide to recommend more fertilizer than is needed," said Mr. Melhlop. "We are trying to help farmers make high yields for the lowest cost. When we succeed, he comes back for fertilizer next year. If our recommendations are not accurate, then he is displeased and will look for another dealer."

During his many years in busi-

(Turn to AIDS DEALERS, page 14)



JOHN MELHLOP, owner of Melhlop & Son, Dexter, N.M., who leads a crusade for proper fertilization, is shown analyzing a soil sample in his laboratory. A chemical engineer, he makes good use of the laboratory in selling more fertilizer. Each sample is followed up by another after harvest to determine carryover of plant food.

How to Use Soil Tests to Sell Fertilizer

By JOHN A. MILLER
Agronomist, Fertilizer Division
Consumers Cooperative Assn.

Information from Soil Tests

Before we get into the subject of this paper, let's answer three questions:

1. Do Kansas soils need fertilizer for efficient crop production?

2. Are Kansas soils currently receiving enough fertilizer for efficient farming?

3. Are Kansas farmers using enough soils tests?

A soil test is our best guide to the amount of primary nutrients in the soil. The Kansas summary for the year ending June 30, 1957, showed almost 25,000 tests with:

1. Over 68% below 2% organic matter.

2. Over 53% below 25 lb. available phosphorus per acre.

3. Over 80% below 50 lb. available potash per acre.

4. Over 40% with a pH of less than 6.3.

Kansas farmers used more fertilizer during 1958-59 than in previous years; yet that amount averaged less than 30 lb. of fertilizer for each acre of harvested crops. Assuming average analysis, that represents less than 10 lb. of $N + P_2O_5 + K_2O$ per crop acre. A bushel of wheat contains approximately 2 lb. of these three nutrients; corn slightly less. That should answer the second question.

There are now approximately 110,000 farm units in Kansas (120,167 in 1954 census). With less than 25,000 soil samples tested each year, this means that less than 25% of the farms had even one soil test made. More probable, about 10% of the farms each averaged two samples tested.

But surveys show that soil test reports, when available, are a strong influence in the farmers' purchases. A recent survey shows that farmers who use large amounts of fertilizer use soil tests more than the average farmer.

Level of Use	% Using Soil Tests
High	61%
Medium	47%
Low	40%
None	24%

Buying Motives Are Usually Based On:

1. Reasons, or
2. Feelings.

Soil tests can be used to stimulate both motives.

Soil tests appeal to **reasons:**

1. Lower unit costs of production if fertilizer application is based on soil tests. The fertilizer cost of the nitrogen and phosphate (most commonly deficient in Kansas) contained in a bushel of wheat is only 20¢. Since the crop uptake of applied fertilizer is never 100%, it is commonly stated that it takes 3 lb. of nitrogen (about 35¢) to produce an extra bushel of wheat. This applies only until some other "limiting factor" affects the crop growth. The phosphate cost to produce an extra bushel of wheat is slightly less than for nitrogen, even though the crop uptake of phosphate the first year is less than for nitrogen.

The fertilizer cost for a bushel of corn or grain sorghum is even less than for wheat. All are far below the current market price of the grains.

2. Higher yields. Until some other production factor limits yields, the higher the fertility level in the soil, the higher the yield. This rule applies even in dry years. In the situation where some other factor limits the yield, the cost of the fertilizer is not lost. Most of it will carry over to benefit future crops.

3. Higher profits. Because so many crop production costs are "fixed costs," higher yields from fertilizer application usually mean higher net profits. This rule applies until the selling price of a crop unit is little more than the cost of fertilizer required to obtain that crop unit.

4. It's the scientific method. Many farmers still have some reservations regarding the economic value of fertilizer, but if they are going to use fertilizer, an application based on a soil test is better than a guess. They have more confidence in a dealer that tries to base his sales on the soil test reports.

A soil test is a powerful tool to use in selling fertilizer.

Soil Tests Can Appeal to Feelings and Thereby Act as a Sales Tool

1. Ambition. Most people want to succeed so they can give their children a good education, so they can retire at an early age, and so they can enjoy luxury. Few people are not susceptible to this appeal.

2. Pride. What is your opinion of a farmer who doesn't care to equal or exceed his neighbor in crop yields? The person devoid of pride is hopeless. Many people use modesty to conceal their pride, but don't you conclude that it is non-existent.

3. Prestige. Most people enjoy the feeling accompanying success. By asking for advice, you build the person's ego, and he feels increased prestige. After growing an outstanding crop, a farmer gets inquiries about how he did it, which adds to his prestige.

4. Fear. Many farmers are afraid they may be forced to quit farming because of financial problems. Records show a decrease of approximately 100,000 farms in the U.S. each year for the past quarter-century. The decrease in Kansas averages about 2,000 each year. Many of these units ceased operation because of low financial re-

(Turn to SOIL TESTS, page 15)

WHAT'S NEW
IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

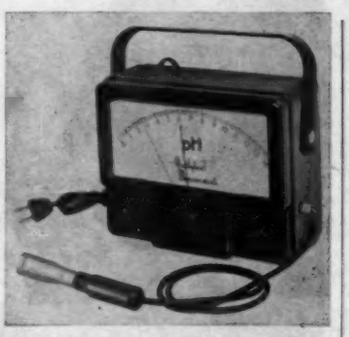
No. 6042—Fertilizer and Dispenser

Leon's Horticulture Specialties Corp. announces the availability of a unit which allows the user to water and fertilize his lawn at the same time. According to the company, the dispenser uniformly dispenses the

correct amount of fertilizer in liquid form. The dispenser is non-breakable and rust proof. The unit is operated by placing a "Vita-Brick" fertilizer formula in the dispenser, attaching it to the hose and spraying the lawn. A chart for selecting the correct formula for plants and area to be covered is included. For details, check No. 6042 on the coupon and mail.

No. 6045—pH Meter

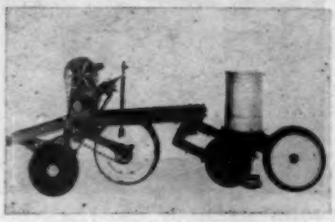
Analytical Measurements, Inc., announces the model 700 "Big Scale pH Meter," which is designed to read pH values within .02 pH. The 5 lb. unit is portable and can be used wherever a standard 115 volt AC outlet is available. Features include a big scale



so that it can be read quickly, a single operating control and a high output electronically modulated amplifier. The polyethylene electrode probe unit permits the user to bring the meter to the sample, the company says. For more information, check No. 6045 on the coupon and mail.

No. 6044—Fertilizer Unit

International Harvester Co. has introduced a fertilizer unit, which it says will enable once-over planting



immediately after plowing through the use of a wide packer wheel that compacts soil ahead of the planter furrow opener. For use with the McCormick No. 185 beet or bean planter, the unit eliminates seedbed preparations and saves time, labor and fuel, the company says. The unit mounts on a tool bar ahead of the planting unit and features a 115 lb. fertilizer hopper. In addition to compacting soil over the fertilizer, the packer wheel also provides a firm bed for seed deposited at uniform depth by the planter furrow opener. A contour press wheel, behind the planter, firms soil over and around the seed while the center ridge applies additional pressure directly over it. For details, check No. 6044 on the coupon and mail.

No. 6046—Bulk Material Hauler

The model "C" bulk material hauler has been introduced by Highway Equipment Co. The unit, according to company literature, can be used for transporting virtually all materials of fine granular consistency, such as

flake gypsum, salt, pulverized lime and superphosphate. Four different body lengths are available including 8 ft., 11 ft., 13 ft. and 15 ft. A 30 in. heavy duty, four-ply rubber belt-over-chain conveyor is utilized. The screw-jack allows precision setting of the feedgate, the company says. For details, check No. 6046 on the coupon and mail.

No. 6043—Nitrogen Analyzer

An automatic nitrogen analyzer has been released by Coleman Instru-

ments, Inc. According to company literature, the unit, within its 12 to 15 minute cycle, performs a complete determination of nitrogen content. It will measure nitrogen in an almost unlimited variety of materials, the company says, including foods, fertilizers and chemicals. For more information about the unit, check No. 6043 on the coupon and mail.

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6032—Ammonium Nitrate Booklet

Phillips Petroleum Co. announces the availability of a publication entitled "Facts You Should Know About Fertilizer Grade Ammonium Nitrate." The illustrated publication was compiled by the company to "briefly and concisely set forth the basic properties of and pertinent information on ammonium nitrate," the company says. For copies, check No. 6032 on the coupon and mail.

No. 6039—Bulk Fertilizer Booklet

"Your Land Is Different," a booklet on modern bulk fertilization, is being made available by Highway Equipment Co. The booklet, according to the company, contains timely, money-saving tips on such farm problems as restoring plant foods, soil testing, liming, proper application of fertilizer and effective spreading patterns. In addition, the booklet notes bulk spreading methods as well as modern commercial bulk spreading equipment. For copies, check No. 6039 on the coupon and mail.

No. 6033—Static Electricity Neutralizer

Statikil, Inc., announces a formula is available packaged in self-spraying cans or bulk for neutralizing static electricity. Among some of the suggested industrial uses are for industrial machinery, meters and indicators. The company says the product is effective as a spark retardent in hazardous operations. Effect of the product is cumulative so that continued use provides a durable static freedom. It dries instantly and invisibly, and can be applied by swabbing, wiping, spraying with hand pump or power spray or by fogging onto material by means of fully automatic jet nozzles. For details, check No. 6033 on the coupon and mail.

No. 6040—Insecticide Guide

A compact guide for users of Thiodan insecticide, a spray-dust material designed for control of a wide range of insects on a variety of crops, has been released by the Niagara Chemical division of Food Machinery & Chemical Corp. The guide features an easy-to-read chart on how to use the product, the company says, plus suggested amounts for control of specific pests, time of application and other pertinent data on individual crops. For copies of the guide, check No. 6040 on the coupon and mail.

No. 6036—Fertilizer Injector

Literature concerning the "Watermatic Injector" for the injection of fertilizer into sprinkler irrigation systems has been prepared by Arcadia Pump Manufacturing Co. The system is powered by irrigation water pressure. One ¾ in. pipe opening is needed to connect with the injector. The unit is light, compact and easy to operate, the company says. The line of flow of corrosive fertilizers is through clear plastic visible self-flushing check valve. The unit includes a fertilizer plastic suction hose,

Send me information on the items marked:

- ☐ No. 6031—Crab Grass Herbicide
- ☐ No. 6032—Ammonium Nitrate Booklet
- ☐ No. 6033—Static Electricity Neutralizer
- ☐ No. 6034—Tag Handling Machine
- ☐ No. 6035—Pre-Emerge Spray Equipment
- ☐ No. 6036—Fertilizer Injector
- ☐ No. 6037—6-Row Boom Kit
- ☐ No. 6038—Pressure Relief Valve
- ☐ No. 6039—Bulk Fertilizer Booklet
- ☐ No. 6040—Insecticide Guide
- ☐ No. 6042—Fertilizer and Dispenser
- ☐ No. 6043—Nitrogen Analyzer
- ☐ No. 6044—Fertilizer Unit
- ☐ No. 6045—pH Meter
- ☐ No. 6046—Bulk Material Hauler

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COMPANY .....

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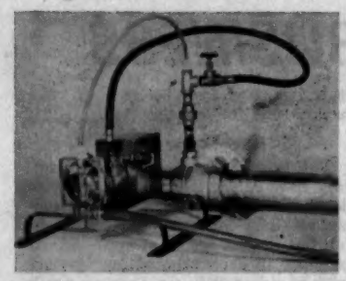
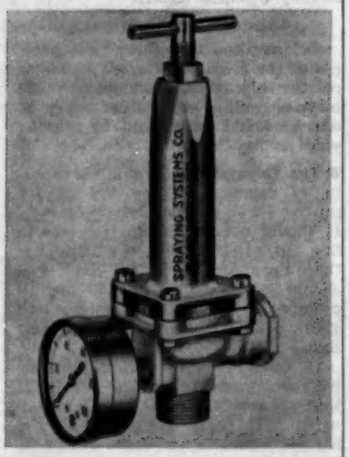


power and injection hoses with self-flushing sand screen. Fertilizer capacity is from 3 to 45 gal. an hour. For more information, check No. 6036 on the coupon and mail.

No. 6038—Pressure Relief Valve

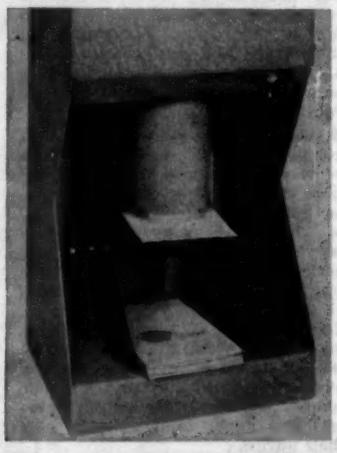
A pressure relief valve for use on farm sprayers, has been introduced by Spraying Systems Co. The liquid-contact face of the valve is a special corrosion resistant diaphragm that results in responsive, chatter-free pressure control, the company says. Supporting the setting of the diaphragm is a dual stainless steel spring



assembly, consisting of a light spring for the lower pressure range and a heavy spring for the high pressure range. All parts of the valve that come in contact with chemicals are made of nylon and stainless steel, the company says. For details, check No. 6038 on the coupon and mail.

No. 6034—Tag Handling Machine

A tag handling machine called Tag-All is being manufactured by K & S Metal Products Co. and distributed to user-dealers or salesmen by Hanson



Sales Co. Tags are placed in the tray at the bottom of the machine and by means of vacuum, a single tag is raised from the stack and held until the operator removes the tag. The portable machine adapts itself to any speed operation, according to the company. For details, check No. 6034 on the coupon and mail.

No. 6035—Pre-emerge Spray Equipment

Tryco Manufacturing Co., Inc., announces the availability of a line of pre-emerge spray equipment. Two,

four and six row units are included, as complete sprayers or as kits for adding to spray equipment already owned. Nozzle mount brackets are easily attached to each packer wheel, the company says, and accurate adjustments can be made in any direction to correctly position the special nozzle. A 50 mesh stainless steel line strainer, plus individual nozzle screens protect the tips. For details, check No. 6035 on the coupon and mail.

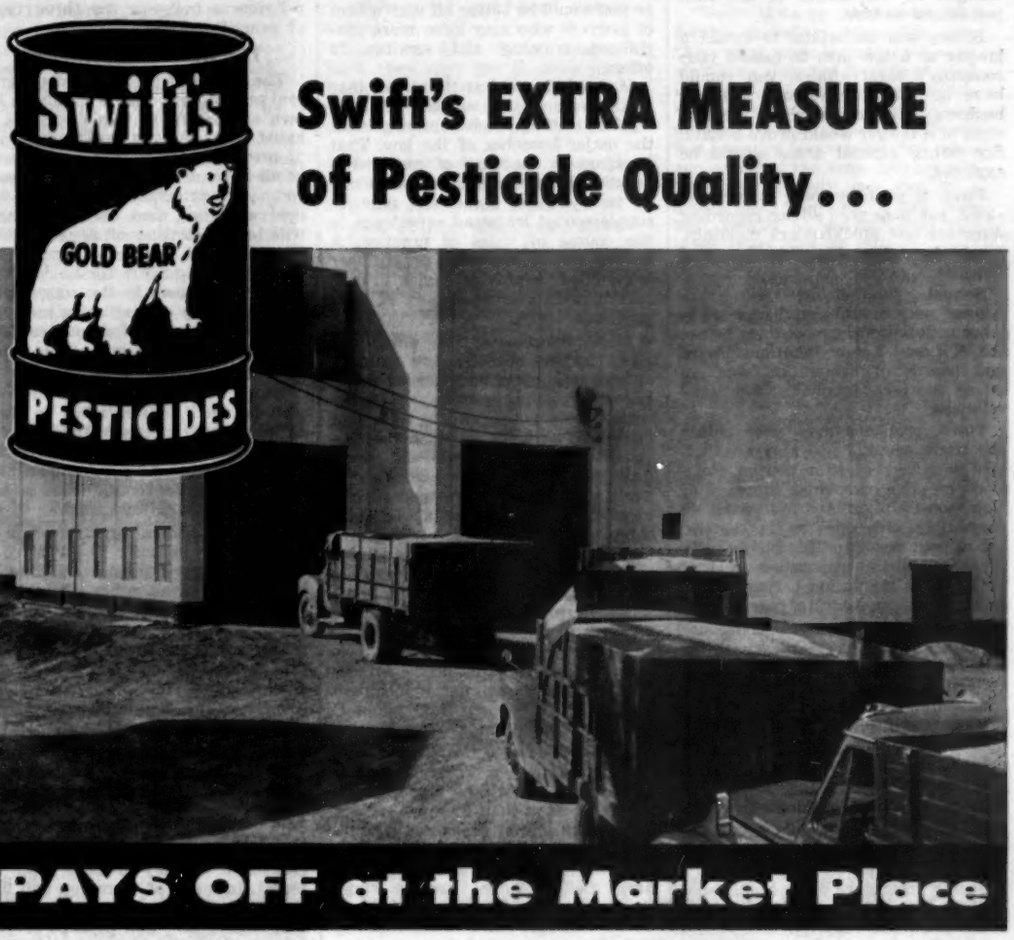
No. 6037—6-Row Boom Kit

A six-row boom kit (Model 640-E) has been introduced by Hahn, Inc.

The boom is specially designed for application of liquid fertilizers and features an aluminized-steel boom pipe, the company says. The three-section design covers full six rows. It can be used with all Hahn trailers, Hahn tractor-mounted sprayers and other type tractor sprayers, the company says. For details, check No. 6037 on the coupon and mail.

No. 6031 Crab Grass Herbicide

Amchem Products, Inc., announces "No-crab," a herbicide designed to prevent crab grass, kill dandelions, plantain, chickweed and other broadleaf weeds, and grub-proof the lawn. According to the company, the product can easily be applied in any lawn spreader. It will sell in an 18 lb. bag, which will treat 1,000 sq. ft., and a 45 lb. bag. For more information, check No. 6031 on the coupon and mail.



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SELECTING A LAWYER FOR YOUR BUSINESS

By THEODORE VOORHEES
Partner in the firm of
Barnes, Dechert, Price, Myers and Rhoads
Philadelphia, Pa.

The Need for Legal Representation

Hiring a lawyer is an important task. This article will give you some suggestions on how to go about it. But a word of warning is in order. Some of the steps advocated here may not be appropriate for you. The reason for that qualification is this: Certain aspects of the preliminary investigation of a law firm and its members simply are not feasible for most very small business owners. In some situations, lawyers may refuse to tell a businessman all he wants to know. Some law firms, moreover, may not want to handle the kind of case proposed at all. Still, you can ask various questions and expect to get answers on them—including the fees charged by the lawyer or law firm you intend to hire.

Before you undertake to retain a lawyer or a law firm to handle your company's legal affairs, you should have in mind the various fields of business activities in which the services of a lawyer would prove helpful. Six rather general areas should be explored.

First, if your business is incorporated, you may need advice regarding directors and stockholders meetings, dividends, rights of stockholders, and the like.

Second, relationships with employees may require legal services in labor negotiations, proceedings before the National Labor Relations Board and boards of arbitration, and all other matters involving industrial relations.

Third, problems may arise within the trade wherein you may need advice with respect to anti-trust violations by your company's suppliers or Robinson-Patman Act questions in connection with sales to the customers of your concern. This highly technical and little understood field of government regulation becomes more important from year to year.

Fourth, the company may encounter difficulties in its relations with the public, of which the most common are collection claims and claims for personal injury, property damage and product liability. Somewhat less frequent are claims for libel, slander, defamation, false arrest and malicious prosecution.

Fifth, the legal problems of taxation, federal, state and local, are faced almost daily by all business concerns.

Finally, there are other highly specialized fields of legal advice such as those of patent, copyright and trademark, Security and Exchange Commission financing and practice before governmental agencies such as the Federal Power Commission and the Interstate Commerce Commission.

Legal Advice From Others Than Lawyers

Many people will tell you that there is no need for a lawyer's advice in connection with any or all of the foregoing. This is a dangerous fallacy.

● **Ask Lawyers About the Law.** It is against the law for any person who lacks legal education and training to engage in the practice of law. However, an astonishing number of seemingly intelligent people act on the advice of non-legally trained individuals on matters involving questions of law. The unlawful practitioner, no matter how honest and well-intentioned he may be, is apt to cause serious grief. He is not trained to perceive legal problems, and he cannot be aware of all the legal implications of his words. Preventive legal advice is inexpensive. But the cost of litigation, which would have been unnecessary had that advice been obtained earlier, can be very high.

The Choice of a Lawyer or a Law Firm

Most business concerns in search of legal representation will find that three choices are open to them:

First is the general practitioner who maintains a law office by himself, or with one or two younger associates. Second is the small firm having several lawyers practicing together. Third is the larger law firm, which may have from around a dozen lawyers to as many as 100 in a few instances.

● **Making a Basic Choice.** Assuming that your company is looking for high quality, the first basic question which you will face, therefore, is whether you wish to be represented by a general practitioner capable of advising you on all legal problems and giving you representation in court, or whether you would be better off with a firm of lawyers who may have more specialized training and services to offer.

It should be said at the outset that all lawyers today, as part of their legal education, receive training in all the major branches of the law. That training, in the case of many who practice by themselves or with one or two younger associates, may be supplemented by broad experience in the course of years of practice. A lawyer who is a general practitioner is qualified to provide advice in connection with a great variety of legal questions.

● **Legal Specialists.** The law, however, has become extremely complex, and many lawyers have ceased to engage in a general practice and are devoting their entire efforts to one or more narrow fields in which they become specialists. Large and small firms of attorneys have tended to include groups of experts who supplement each other's special skills. Thus, a typical small law office with six or eight attorneys may have one lawyer specializing in general corporate management, another in labor matters, a third in courtroom work, and a fourth in taxation problems. If the office is a little larger, it may have specialists on antitrust problems, personal injury cases, unfair competition, product liability, and administrative agency practice, as well.

● **A Word About Costs.** You will want to know, of course, whether your legal costs will be higher if you hire a law firm than they would be if you hired a lawyer practicing by himself. Unfortunately, no generalization can safely be made. There are both firms and individual lawyers whose charges are low. There are also those whose charges are comparatively high. It may be said, however, that in the case of the top-notch lawyer or law firm, charges for legal services reflect the opinion of counsel and client as to what those services are worth. As in the case of the seller of any commodity, a lawyer will not long be successful in obtaining clients if his charges are out of line with respect to his legal talents. The cost of legal services should not be the chief element in the choice of legal counsel. Good advice will save you money, and you will find that most lawyers will adjust their fees if there is dissatisfaction on the part of the client.

Of course, the selection of counsel may be narrowed down by conditions in a given locality. For example, in the smaller town or city your choice of counsel may be solely between the general practitioners and perhaps a few small firms. In such case, you may decide to rely upon a local lawyer for your routine legal questions and seek out the advice of specialists in a neighboring town or city if and when the need for more specialized service should arise.

Most business concerns will find that they have a broader choice of attorneys to represent them, and a few pointers may be given as to the differences between the three types of practitioners.

The General Practitioner

The choice of an independent, general practitioner, who is wholly on his own or has one or two associates to assist him, has the great advantage of providing you with a lawyer who at all times will be familiar with your company's principal affairs. You will deal with one man only, and there will be no division of responsibility. Also, you will be able to appraise his potentialities quickly for he is likely to be well known in the community. The possibility of conflicting interests is probably remote, for you are dealing with only one man and his existing legal relationships.

Many business concerns, large as well as small, are satisfied to place all their legal affairs in the hands of a single attorney. But in particular cases, the general practitioner may be on an unequal footing when he has to oppose a legal specialist.

When the general practitioner is on vacation, or becomes ill, or is compelled to expend substantial time on the affairs of his other clients, you may be temporarily without the protection of legal advice. His death may cause grave hardship, since there may be no one else to carry on his work.

The Small Firm

The law firm with several lawyers practicing together has the advantage of enabling you to maintain close personal relations with your counsel since the number of attorneys with whom you will deal is relatively small. Such a firm may provide specialists in the key areas of your interest. In many of them you will find specialists in trial work, taxation, corporation law, and perhaps several others. The retention of such a firm, however, presents this feature, when compared to the lone practitioner: It involves at least some division of responsibility. As compared with the large office, it is, of course, generally not in a position to give the range of specialization which the latter has to offer. However, you may find that it is equipped to take care of your basic needs for legal service.

The Large Firm

The large law office's chief advantage may be ascribed to its quality of depth. It does not merely have specialists in a large number of fields, but has men of different ages and experience in each area whose services may be adapted to the varying needs of the client. Of course, conditions in a large firm can tend to dilute the personal relationships between the officials of your company and its counsel. And there may be, unless carefully watched, a division of primary responsibility, too.

Obviously, just as a small law firm has a broader clientele than a single practitioner, a larger firm is apt to have considerably more clients than a smaller one. The greater breadth of its contact and experience may constitute an advantage to you. Whether you deal with a general practitioner or a law firm you may find that lawyers, in addition to their purely legal activities, may become important intermediaries in transactions of a strictly business nature.

Legal Qualifications

Before discussing the actual process of the creation of a lawyer-client relationship, mention should be made of several other criteria for selection, which should assist you in making your choice.

● **The Counsel You Want.** Essentially, of course, you are looking for proven legal ability and experience. It should not be difficult for you to find out whether your candidate has these primary qualities; and you should seek a man who will furnish prompt and efficient service, will speak plain language and charge fair fees.

He should have true stature in your community and before the courts. If that stature is present, it will surely mean that there exist with it the highest standards of legal ethics. If you should retain counsel who did not have such high standards, you would be likely to find that the reputation of your company might well suffer in the eyes of your community.

One further guidepost should be mentioned if you are considering the employment of a law firm. You would be wise to look for balance between youth and age in the firm. There is nothing which strengthens and improves a law firm more than a program, steadfastly adhered to, of infusing new and youthful blood.

Preliminary Inquiry

Before you establish a client-attorney relationship, it goes without saying that you will want to make a careful inquiry about the lawyer or firm of your choice. You should not take on the first man whose name is mentioned, or employ a man merely because he is the friend of someone you know.

● **Where to Seek Advice.** There are a number of people whose advice can be of value. Perhaps your first questions should be directed to your banker, public accountant or auditor, all of whom have many dealings with lawyers and are familiar with your business and your needs. Do not hesitate to inquire at the courthouse about the status of your prospect. You should, of course, talk to business friends whose discretion is to be trusted, and if there are any lawyers who are disqualified from being your counsel because of conflicting interests you might even want to seek their advice.

Personal Interview

When you are satisfied that you have learned enough about the general practitioners or law firms of your community, telephone the man of your choice or the head of the firm you have chosen, and ask him if you may call upon him at his office. (The

SUMMARY

Every business needs legal advice from time to time. There are, after all, many fields of business activities in which the services of lawyers may prove essential. Reliance on the assistance of persons lacking legal training may prove costly in the long run.

Because a lawyer or law firm can be a tremendous asset to any organization, the selection of counsel should be made with great care: Counsel should only be engaged after a thorough, intelligent appraisal of his capability and potential value to your concern. You should try to find the lawyer or law firm best equipped to render service to the particular needs of your business.

This article discusses several criteria for the selection of counsel and certain steps to be taken in securing legal representation. It points out that you have a choice between general practitioners and law firms, the latter usually containing specialists in various fields of law.

Legal services cost money, of course, but preventive legal advice is inexpensive when compared to the cost of law suits which may result from the failure to seek out competent legal advice. This article appears through the cooperation of the Small Business Administration.

impression which the law office itself may make upon you may well be an important factor in the making of your selection.)

● **Questions to Ask.** If you get an interview with a member of a law firm, don't hesitate to ask him about the age, education, legal qualifications and experience of those practicing in his office who might handle the work of your company. You ought to tell him a little about your business set-up, and he should explain what specialists his office has who might prove of service to you. You are entitled to know who the principal clients of the law office are (so as to make sure that it represents no one whose interests conflict with yours), how broad is the firm's practice and how wide its experience. You will want to know how well the office is equipped, time wise, to represent you. Time is the lawyer's most important stock in trade. If he or his office is not busy, you should be cautious and get more information about him from other sources. If he is very busy, you will want to make certain that your problems will not find themselves on the rear burners of any legal stove.

● **Hiring a Law Firm.** If you intend to hire a law firm, there are two key questions that you should ask at your initial interview. First, how is the work allocated as between partners and associates, and between the younger and older men? This is of vital concern to you because you will pay a good deal more for the services of senior partners than for those of junior partners, and more for the latter than for the work of the junior associates.

Second, you are entitled to know from the beginning how the law firm handles the question of fees. Most well-managed law offices follow sound principles of cost accounting and base fees upon the amount of time devoted to the particular work. You are entitled to know what sort of time records they keep (and whether they will show them to you when you are billed). They may not be willing to have you pin them down on precise hourly rates charged by senior partners of the firm, but they may be willing to give you the range of rates charged for the work of younger partners and associates.

Such a discussion is a delicate one. But both you and the law firm will remain on more comfortable terms if this matter is placed on a business-like basis from the very beginning.

The Division of Your Work

As it becomes evident that you are seriously considering retaining the lawyer whom you have sought out, he (if he is a member of a firm) should want you to meet other lawyers in his office. Of course, if he is a member of a large firm he may pick out only a few of his key partners, but they should be the members of his staff most likely to do the work of your company. Do not shy away from the suggestion that a number of different men may handle various aspects of your work. On the contrary, if you are going to retain a law firm, you should make the most of the opportunity to get the specialized knowledge of the lawyers in it.

● **Building Teamwork.** Obviously, if you do employ a firm the relationship between your executives and the various lawyers in that firm who may handle your work cannot be fully developed at the time of your first contact with the law office. That will be worked out over a period of time. You will be wise to ask the law firm to designate one man who will have the general responsibility for the legal work performed for your company and who will be, in effect, your contact man. There would normally be no reason why the senior partner of the firm either should or should not be that man, but in the beginning some businessmen feel more comfortable relying upon him.

● **Who Should Do Your Legal Work?** The law firm itself is generally best

(Turn to LAWYER, page 19)

OSCAR & PAT

By AL. P. NELSON

With a feeling of satisfaction, Oscar Schoenfeld inserted his key into the office door at 6:45 that winter morning. It was cloudy and dark, but this made no difference to Oscar. He was always satisfied and happy when he got to work ahead of his partner Pat McGillicuddy and the other employees. It made him feel important and better than his co-workers. He belonged to the old school that thought that a boss and also the employees should be at work 15 minutes or more ahead of time and stay on the job the same amount of time after closing hours.

Now Oscar approached Pat's desk. He always did this first thing every morning, so he could do a little spying, so he could deduce from what Pat had on his desk, what the Irisher had been up to when working after supper, as he sometimes did.

"Ach, what is this?" Oscar exclaimed as he saw a number of books stacked on Pat's desk. "Books he's readink, too, now. Andt he has magazines andt circulars all over the place."

Irritably he picked up the books and examined their titles. One was about business psychology, another was on increasing sales, another dealt with employee productivity and a few others with pay incentive. Oscar noted that all the books bore the imprint of the local library.

"Ach," he growled, "I knew it. Not one has he got aboudt collections. Everythink he studies but what he shouldt study on—collections. What does he want to be now—a professor, too? Everythink but a goot fertilizer business man. What a partner I got, nicht wahr?"

Holding his head Oscar went back to his desk and ripped open a copy of Croplife. Angrily he turned to the classified section and scanned it. "Ach, nobody wants to sell oudt. What's the matter with fertilizer dealers? Ain't any of them gettink oldt and want to retire? Or are they all makink too much money?"

By this time it was 7:30. The door to the salesroom opened and in came Pat McGillicuddy. He wore a storm-coat and was hatless. His eyes gleamed.

"Hello, Oscar," he said cheerfully. "I've got something to talk to you about—so I came down early."

Oscar swallowed. He could hardly believe his eyes that Pat had come to work so early. Usually Pat drifted in between 8 and 9 o'clock, or sometimes later. His usual excuse was that often he worked nights at the office on ads and promotions, or just studying agricultural magazines. Besides, he said farmers didn't like to have salesmen calling on them so early when they had a lot of chores to do.

"I don't feel like talking," Oscar said contrariwise. "Ach, I have a lot of bills to look over. It's working time."

Pat chuckled. "Witty as ever, I see, Oscar. Well, that's one thing I have to be thankful for. You'll always tell me what you think, no matter what. You'll never hold anything back."

"I call a schpade a schpade," Oscar said bluntly, looking at his papers. "I don't use fancy words like you do."

Pat sat back in his swivel chair and it creaked a little. He folded his hands behind his dark thatched head. "Oscar," he said, "I attended a chamber of commerce meeting yesterday and heard a business consultant talk."

"That's the trouble with people nowdays," Oscar growled. "Ach, everybody talks too much and nobody works. That's why the country is in bad schape."

"Is the country in bad shape?"

"Is it in bad schape, McGillicuddy?" roared Oscar, his face livid. "With so many people in debt, with so many schpendink more than they earn, with the government billions in debt, what do you think? Who is goink to pay for all this, Santa Claus?"

"Oh, Oscar, this is the new age of credit and expansion. What's the difference if people are spending and going into debt, so long as they pay on their debts and keep earning more?"

"Iss that so?" Oscar snapped. "Well, they ain't got it, have they? That's the difference. Andt if they schtop earnin' what then? Who's gonna give it to them?"

"Let's not get into an economic argument, Oscar," said Pat. "Nobody has solved that argument yet. It goes on year after year. Meanwhile we all eat. Now this business consultant I heard at the chamber of commerce meeting gave me an idea. I think we could pay our employees differently, Oscar, and get them to take a deeper interest in our business and also do more selling and service."

Oscar's lips thinned. "McGillicuddy, are you tryink to tell me you want to give them fellers a raise?"

"Well—not exactly. But I have an interesting plan. If we explained to our men that our business has its ups and downs every year—good months and bad months, that would be the first step. It would show them that we don't take in the same amount of money every month."

Oscar looked at Pat suspiciously and waited.

"Now suppose we would offer to give our employees two dollars a week more pay for every month that our current volume exceeeds the volume of a year ago."

Oscar's face was drained of color. "Why?"

"Why?" echoed Pat. "Well, it would give them incentive to work harder and make more sales. If they know they'll get two dollars a week more if volume is higher that month than a year ago, they'll know their monthly wage will depend on how much they do—each of them—to boost business. They'll become partners of ours in a sense. Let us try it for six months, Oscar, and see if it works. If business doesn't increase, we won't lose anything. No increase—no two dollars a week."

"No!" Oscar thundered, the words exploding from his lips. "You want more business, when we ain't even collected for lots of what we soldt already. How foolish. Irisher, I will make you a proposition. If you go oudt andt collect more for two months than what you collected the same two months last year we will pay you $5 a month more than your salary. Ach, that wouldt be sensible—not this other crazy idea of yours."

Pat rose to his feet, his face flushed with anger. "You're hopeless!" he said. "I might as well go out and try to sell fertilizer today."

"Sell?" shouted Oscar after him. "Try collectink for a change. Maybe you'll findt the farmers will be so surprised somebody asks them to pay for what they got six months ago, that they will drag oudt the checkbook. One of these days I will go oudt and tell them what I think of them."

"I know you will," retorted Pat hotly. "Give me that list. I'll try to see a few of them today. But if I clean up this list to a 60 day deal, I'll push that employee-volume proposition again."

"Ach, there you go dreamink again," Oscar growled. "Don't try to catch too many birdts at one time. Bring in the gelt. That's your chob today."

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FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Wyoming researchers, summing up results of two years of study on fertilizing warm-season short-grass ranges, report that nitrogen increases blue grama production and crude protein content and improves distribution of sheep grazing the area.

These studies follow up earlier tests that showed nitrogen increased grass production and improved livestock distribution on cool-season wheatgrass and Idaho fescue, says R. L. Lang, Wyoming University plant scientist.

Wyoming University and the U.S. Department of Agriculture Agricultural Research Service cooperated on the studies at Archer and Gillette substations in 1958 and '59.

Researchers applied 33 and 66 lb. of nitrogen per acre on different plots in April, May, and June. Measuring results in September, 1958, they found that May and June nitrogen applications upped blue grama production. April applications did not increase blue grama production.

In July, 1958, they measured crude protein and found it increased in grasses fertilized in May and June but not on those fertilized in April.

Differences in forage yields and crude-protein percentage were small in 1959 because of drouth conditions, but they still showed some production and crude-protein increases from April, May and June nitrogen fertilization.

Sheep in the test area preferred grazing all plots treated with nitrogen, especially those treated in May.

Costs are still a problem, Mr. Lang says. Nitrogen fertilization did not increase grazing capacity of the range enough to offset the cost.

★

"Ranchers can increase four-fold the carrying capacity of their meadows, or increase the hay production to three to five tons per acre," says Dr. R. E. Warnock, member of National Plant Food Institute western task force. "These remarkable increases in productivity can be brought about by taking advantage of fertilization, water control, and improved species," Dr. Warnock stated.

Dr. Warnock's report "Fertilization of Mountain Meadows Pays Dividends," given at the American Society of Range Management meetings at Berkeley, Cal., last fall, is summarized here by the western regional office of NPFI.

Dr. Warnock has conducted grazing trials on fertilized mountain meadows in various parts of California during 1956, 1957 and 1958.

One test conducted at Quincey, Cal., during 1958 resulted in a net profit of 28 extra dollars per acre from fertilization with nitrogen and phosphate, according to Dr. Warnock. Fifteen acres of meadow were fertilized at a cost of $19 per acre and 40 head of steer placed on this acreage. Another 40 head were put on adjacent unfertilized meadow. Fertilization resulted in 192.5 lb. extra gain per acre, or about $47 more per acre than realized from the unfertilized acreage. Subtracting fertilizer cost, this meant $28 net profit per acre from fertilization.

From other tests Dr. Warnock found that nitrogen and phosphate were needed for increase in forage yield and its content of crude protein and phosphorus, and that fertilizers applied the previous year had a marked carry-over on the yield of forage and its protein content.

"Today's narrow margins between costs and returns require that range and meadow lands be managed, fertilized and irrigated for top efficiency just as crop lands in the valleys below," Dr. Warnock says. "Fertilization is often the only way a rancher can increase the size of his operation, by obtaining increased carrying capacity, and thus get better efficiency."

★

"The Dollars and Sense of Meadow and Range Fertilization" was the subject of a presentation made by Dr. Roy Lipps, fertilizer industry agronomist and member of the National Plant Food Institute western task force, Salt Lake City, at the recent Intermountain Meadow and Range Fertilization Conference held at Ft. Collins, Colo.

Dr. Lipps pointed out the increasing competitiveness in the production of beef and stressed the importance of good range management and adequate fertilization to improve the intermountain rancher's efficiency and ability to cope with competitive forces.

Reporting on work conducted by Dr. C. W. Cook of Utah State University on dryland range, Dr. Lipps said, "Application of only 40 lb. of nitrogen per acre on seeded foothill range increased forage production, protein content, forage utilization, and total digestible nutrients. About $5.40 worth of beef per acre was produced above fertilizer costs."

From tests conducted in Montana, Dr. Lipps reported that an application of 600 lb. of nitrogen per acre gave a seasonal average protein content of 20.3% as compared to only 12.5% crude protein content where no nitrogen was used. Those meadows receiving high nitrogen fertilization produced 580 lb. more beef per acre than did the unfertilized meadows.

From eight fertilizer demonstrations conducted by county agents in Idaho came the fact that 200 lb. of nitrogen per acre would produce 703 lb. more protein (valued at $43.30 per acre above fertilizer cost) than from unfertilized grass.

Turning to Wyoming, Dr. Lipps quoted results from 14 experiments showing reductions in hay and protein production costs through the use of fertilizer. 160 lb. of nitrogen per acre produced protein for 2.3¢ per lb. and hay for $6.70 per ton, about one-quarter the current market price for these two commodities. "These are real efficiencies," Dr. Lipps said, "and can do much to protect the intermountain rancher against competition or falling prices."

Other benefits from fertilization enumerated by Dr. Lipps are earlier grazing, aftermath full grazing, more feed from the same acreage, lower labor costs, ability to fight both drouth and cold weather, improved forage quality, conservation of soil and irrigation water, irrigation that pays, fertilizer carry-over, and other ranch management efficiencies.

The Intermountain Meadow and Range Fertilization Conference, at which Dr. Lipps was speaking, was co-sponsored by NPFI's western regional office, and the Colorado Cattlemen's Assn.

★

It pays to consider your timing when fertilizing annual rangeland.

This is the conclusion of Milton B. Jones, assistant agronomist at the University of California's Hopland Field Station in Mendocino County, following a recently completed study of effects of timing when applying nitrogen fertilizer to annual rangeland.

During one wet year and two dry years, urea was applied to different Hopland plots at six dates from September to March. Mr. Jones said results showed that early fall application produced more winter feed than late fall applications but, for production of spring feed, applications made up to the middle of February were as effective as fall applications. Urea applied in March was too late for best late-spring feed production.

The protein content of the feed was increased by urea fertilization during the winter months. The earlier applied, the less the protein content was increased, he said. However, total protein per acre did not change with different dates of application. Mr. Jones concluded that reduced protein content on plots fertilized early in the fall resulted from increased growth.

Date of urea application from September to February did not change the protein content of the forage in late spring, he said, but urea applied in March increased the protein content of the forage.

The urea applied in March was absorbed by the plants, but was not fully utilized in increased growth as were the earlier applications.

★

Equipment once used to spray 2,4-D should never be employed for applying any other pesticide on a sensitive crop, warns Robert Z. Rollins, chief of the Bureau of Chemistry of the California Department of Agriculture.

He said it should be reserved only for those purposes where slight contamination will not cause damage.

Speaking at the recent 29th Annual University of California Farm Machinery Conference at Davis, Mr. Rollins reported that there have been several cases where operators took heroic precautions to decontaminate such equipment, only to find that enough of the material was left somewhere in the system to cause conspicuous symptoms of injury on crops sprayed later with a different pesticide.

"Even if an operator is certain that he can clean all traces of 2,4-D out of a spray rig," Mr. Rollins said, "he will find it hard to defend himself if symptoms of 2,4-D injury show up on a crop that he treats.

"Occasionally such symptoms may come from contamination by 2,4-D before the operator ever sprayed the field, but this will be difficult for him to prove if the records show that he has previously used 2,4-D in the suspected equipment."

Mr. Rollins also said that the design of spray rigs should be aimed at complete and easy cleaning. Carry-over of small amounts of dust or sprays from previous jobs has caused many crop losses, he noted.

AIDS DEALERS

(Continued from page 9)

ness Mr. Melhlop has acquired a vast knowledge of the soils and crops of the area. He finds that some farmers use too much nitrogen, particularly during dry years. This is irrigated country, but when dry, hot summers bear down, farmers cannot get water over the fields often enough.

"Never knowing what kind of season to expect, we try to make recommendations for an average year," the dealer said. "A cotton farmer must spend from $10 to $15 an acre every year to get top production. Sometimes he may spend $20. This is quite a sum of money, particularly if he has 200 acres of cotton. Quite often he wants to get by on less, and our job is to convince him he cannot afford to reduce fertilizer tonnage."

Mr. Melhlop says that too often fertilizer dealers lose business because they do not understand the product. Also they are too prone to agree with a customer when he wants to cut down on the amount recommended.

Melhlop & Son does not rent or loan spreaders, and there is no custom application service. The firm does make delivery on large orders, and Mr. Melhlop often visits farmers to help get the rigs started and the spreaders working properly.

"I like to check soil and moisture conditions, too," he explained. "Liquid fertilizer in particular can be wasted in dry, cloddy soil. Proper application is almost as important as using the right amount."

Melhlop & Son has some customers who live many miles beyond the Dexter trade area. To hold this business the company delivers fertilizer on large trucks free of charge. This practice is not encouraged except on large orders. Local customers usually haul their own.

Mr. Melhlop is one of the supervisors of the Soil Conservation District, and has been influential in getting fertilizers recommended as a needed practice.

"Farmers must make high yields to remain in business," he pointed out, "and this means proper irrigation, good cultural practices and adequate fertilization. We make money by selling it, but the farmer makes a bigger profit by using it."

RECEIVES PROMOTION

OAKLAND, CAL.—Wilson M. Milligan has been promoted to manager of Granco sales and service operations for the entire territory east of the Mississippi River, according to R. C. Anderson, vice president in charge of operations of Granberg Corp., subsidiary of American Meter Co.

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SOIL TESTS

(Continued from page 9)

turns, often associated with marginal units and poor management. It is a real threat.

Ways to Get Soil Samples Through a Dealer Promotion

Experience proves that it is much easier to sell fertilizer to a farmer who has a soil test report on the field being considered for fertilizer application. Some fertilizer dealers conduct a special promotion plan to get increased soil testing in their trade area. The procedures for collecting the samples vary with different dealers, so several plans are suggested below. Regardless of the plan used, it is very important that the person who does the work be familiar with the instructions on the sheet, "Collection of Soil Samples for Soil Fertility Test." The sheets are available at any extension office.

1. The farmer collects the samples, following directions furnished by the extension service or the dealer.

2. The salesman actually collects the soil for each sample. If you use this method, be sure the farmer goes along. Exchange of information during the trip can be valuable to both parties.

3. The dealer hires someone to take the samples from fields agreed on in advance with the farmers.

4. Some dealers arrange for the local FFA or 4-H clubs to be responsible for samples being turned in during a special "drive." The dealer pays a fee (usually 25¢) to the club treasury for each sample turned in. Care should be used to see that the samples are properly taken so they represent the field.

Regardless of the method used to get the sample, arrangements should be specific for getting the "Information Sheet" filled in. It must accompany the sample.

Who Pays for the Test?

A standard plan has not been developed for paying the laboratory fee for testing soil samples received in a special dealer promotion. The dealer may choose one from the list below, each of which has been used successfully:

1. The farmer.

2. The farmer, but he gets the cost of the test deducted when he buys fertilizer.

3. The dealer pays for one or a limited number of samples.

4. The dealer pays for samples from his trade territory with no restrictions. One out-state dealer does this and has arrangements with the extension agent in charge of the county laboratory to pay on a basis of monthly billing.

Explanation of Soil Test Report

Most farmers lack confidence in their ability to properly evaluate a soil test report. They like a personal explanation, even though the fertilizer recommendations are listed on the report.

Here is the opportunity for the salesman! He can usually arrange with the testing laboratory to get a copy of the report on soil samples with which he gave assistance. This is especially easy if he paid for the test.

Soon after the test report reaches the farmer, the salesman should call on him. The farmer will have questions to be answered, and will want information regarding the accuracy of soil tests. It is desirable to explain that the tests themselves are scientifically accurate and have been developed to show the amount of the nutrients that will be available to the crop under average conditions. Abnormal conditions will cause variations in the amounts of these nutrients that can be obtained by the plants. The strong point is that the tests used by Kansas State University and by the supervised county laboratories have been correlated to the results of hundreds of fertilizer experiments conducted by the state university throughout Kansas. Now is the time to work out a fertilizer program to fit the needs of the farmer. A sample field record sheet is attached. You may want to change or add to this sample sheet. One sheet is used for each soil test area or field. Make two copies—one for the farmer and one for your file. This service can be of benefit to both parties.

If the salesman has the proper answers to this point, it is usually easy to get an order or a booking. Even though the order may not always meet the recommendations on the test report, it is usually a larger order than could have been obtained without the soil test. In this situation, insist on the recommendations being followed on a part of the field.

Follow-Up

Surveys show the salesmen average four calls on a new prospect to make their first sale. So if the call to explain the soil test report did not result in an order, it undoubtedly developed a good prospect. So, order or not, future calls should be productive. On each call, add additional information on the record sheets, as it becomes available. Through this method a soil test can be the basis of good fertilizer recommendations for three to five years. It should also result in increased fertilizer use on the farm, with increased benefits to the farmer and the dealer.

Velsicol Announces Executive Appointments

CHICAGO—The following appointments were announced by Velsicol Chemical Corp.: John F. Kirk, vice president since 1954 and a member of the board of directors since 1958, was named executive vice president of the company.

John F. Kirk

Bernard H. Lorant, previously assistant to the president in charge of research, was named vice president in charge of research and was elected to the board of directors.

A. B. Chadwick was named vice president in charge of manufacturing and engineering. Mr. Chadwick was formerly director of manufacturing and engineering.

California Pesticide Registrants Show Gain

SAN FRANCISCO—There were 1,073 firms registered to sell pesticides in California during the fiscal year ending last June 30, reports the Bureau of Chemistry of the California State Department of Agriculture. This is the largest number on record, and represents an increase from 1,054 during the 1957-58 fiscal year, and from 972 four years before.

The number of products registered for sale in the state was also the highest ever, jumping to 13,786 from 13,193 the year before, and from 11,587 during the 1945-1955 fiscal year.

The 13,786 products were classified under a total of 75 headings and subgroups. These included 28 organic chlorine compounds, 17 organic phosphorus compounds, five petroleum oils, four metallic compounds, three arsenicals, two each botanicals and sulfurs, and 13 miscellaneous pesticides.

Books on Fertilizers And Their Use

FUNDAMENTALS OF SOIL SCIENCE—Third Edition

By C. E. Millar, late Professor Emeritus of Soil Science; L. M. Turk, director; and H. D. Foth, associate professor of soil science, Michigan State University.

This text completely revises and brings up to date the second edition. Special attention is given to progress made in the basic principles of soil science since the publication of its predecessor. This edition includes more emphasis on soil texture and the concept of the texture profile, more discussion of the influence of the soil forming factors on soil development, and more facts about clay minerals to provide a clearer understanding of the differences in the behavior of soils. 496 pages, illustrated. 6x9¼"... $7.75

SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. Dr. Tisdale is Southeastern regional director of the National Plant Food Institute and Dr. Nelson is with the American Potash Institute. 430 pages, cloth bound $7.75

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages $6.50

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WEED OF THE WEEK

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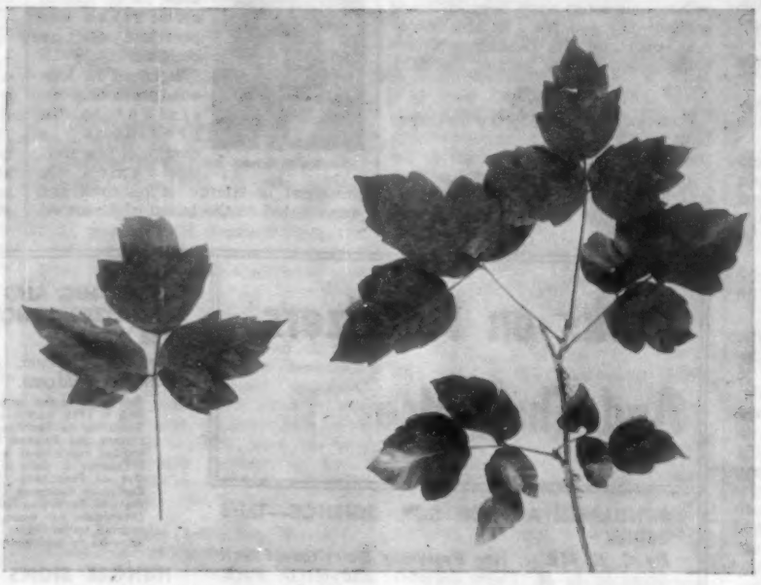

Poison Ivy

(Rhus radicans)

How to Identify

There is an old saying regarding poison ivy: "Leaves of three, let them be." The plant does have three leaves on stems which range from 8 to 18 inches in height. Leaves are smooth, drooping and divided into three parts, or leaflets. Each leaflet is from 1 to 4 inches long, a little longer than wide, and somewhat pointed. Flowers are small, green, five-petaled and arranged in a head 1 to 3 in. long. Berries are small, white, and round. The plant changes from a bright green to a reddish-yellow as it matures.

Where It Is Found

This toxic plant is found in open woods, along fence rows, in thickets, in orchards and in wasteland. It is ubiquitous enough to warrant a close watch for it by persons susceptible to its action against the skin.

Harm Done by Plant

All parts of the poison ivy plant contain a poisonous material which may cause blistering of the skin. Even the roots are toxic, and smoke from burning plants carries enough of the toxin to have this effect on anyone who allows himself to be "smoked" by the vapors from such a fire.

Growth Habits

Poison ivy is a woody perennial, reproducing by seeds and rootstocks. It has a creeping or climbing habit of growth, with old plants sometimes reaching the top of 50-foot trees. Seeds are contained in white berries.

Control of Plant

Some chemical herbicides will control the ivy plant easily, and cultivation or plowing will kill it out. Small patches can be killed by hoeing or digging. Several mowings of infested areas in meadows will kill it out. Obviously it should not be pulled by hand.

Illustration of Poison Ivy Plant furnished through courtesy of the U.S. Department of Agriculture.

Fertility Program Needed to Make Happy Customers*

KNOWLEDGE of basic facts on soil fertility can be a most valuable possession for anyone carrying the responsibility of selling plant food products to farmers. With a certain amount of this good basic information on the use of the product, in addition to providing good service to the customer, one can build a profitable business that will stand the test of time.

This paper deals with a small part of this basic knowledge about plant food, and the effect of a "balanced fertility program." The three major plant nutrients will be chief subjects, of course, and in addition, some of the minor elements and the value of liming will be covered.

Since agronomic plants are the organisms which ultimately use the fertilizer we should first consider the function of fertilizer materials in plants.

Nitrogen is one of the major plant nutrients and is taken up by plant roots in the form of nitrate or ammonium. Inside the plant cells the nitrogen is converted into amino acids, which are, in turn, converted to proteins. Any unbalance, whether from insufficiency or excess, in the supply of any plant nutrients, will disrupt this protein building process. Since nitrogen is the most important plant food element in proteins it is used in large quantities.

The second major plant nutrient supplied in fertilizer is phosphorus. This element is found in the nucleus of every cell. Cell division originates in the nucleus, therefore inadequate amounts of phosphorus will slow down cell division.

The third major plant nutrient is potassium. Even though this element is not a part of the structure of any of the plant cells, it is needed in large amounts by the plant. The exact function of potassium is not clearly understood, however it is involved in the transport of sugars and starches within the plant. Indirect evidence of this is winter-killing of alfalfa. Where insufficient potassium is available, only small amounts of sugar and starches are transported to the plant roots. In this starved condition, alfalfa roots are often severely injured during the cold winter months.

With this background information on the function of the plant nutrients contained in fertilizers, we can now begin our discussion on the effect of a "balanced fertility program" on crop production.

First, I would like to point out briefly the importance of lime in a good fertility program. Long-time studies have shown conclusively the need for a good "balance" of lime, phosphorus, and potash for maintaining stands of alfalfa. The average yearly results over a 9-year period were as follows:

Treatment	Average Annual Yield
	Tons/Acre
No lime—no fertilizer	1.59
5 tons lime—no fertilizer ...	2.63
No lime—fertilizer added**.	2.34
5 tons lime — fertilizer added**	3.44

**500 lb./A of 0-20-20 was added when the crop was established and a top-dress application of 200 lb./A of 0-0-60 was made annually.

These results show that good yields are obtained only when both fertilizer and lime are applied.

The results of a recent experiment conducted on the fertilization of corn has even more strikingly shown that a proper balance of plant nutrients is needed to obtain maximum returns. In this study varying levels of the three major plant nutrients were added to the soil. Addition of nitrogen resulted in a substantial increase in yield. As much as a 30-bushel increase was noted when high levels of nitrogen were added.

The response to applied potassium was intermediate, while very little increase resulted when phosphorus was applied. From this study it was found that the most economical fertilizer application on this soil was 80 lb. an acre of nitrogen, 40 lb. an acre of phosphate and 120 lb. an acre of potash. The results of applying these rates of the three major nutrients are presented below:

Amount of fertilizer applied				
N lb./A	P_2O_5 lb./A	K_2O lb./A	Yield bu./A	Return per $1 invested
0	0	0	80	$...
0	40	0	79	—.33
0	0	120	81	.16
0	40	120	72	—.89
80	0	0	96	1.40
80	40	0	97	1.31
80	0	120	101	1.44
80	40	120	106	1.32

As can be seen from the above chart, addition of phosphorus and/or potassium without adding nitrogen resulted in no yield increase. As a matter of fact, when both phosphorus and potassium were added, a slight yield depression occurred. Furthermore, when the unbalance of available plant nutrients was increased, that is, when high levels of phosphorus and potassium (200 lb. an acre of each nutrient) were applied without adding nitrogen, the number of blank stalks was increased considerably and the yield was depressed by as much as 25 bu. an acre as compared to the check treatment which did not receive any fertilizer.

From these results we don't mean to infer that nitrogen is always the most limiting factor. Similar yield depression results were obtained in another area of the state when nitrogen and phosphorus were applied to a soil severely deficient in potassium. Therefore, if a farmer guesses at the grade and amount of fertilizer to apply or if he follows poor recommendations, it is possible that the yield of the crop might be depressed.

From the results of these studies on balanced fertility we also found that additions of potassium decreased the amount of lodging in corn. About 35 to 50% of the corn was severely lodged where potassium was not applied as compared to about 5% lodged where high levels of potassium were applied. Therefore, addition of fertilizers may have beneficial effects other than yield increases. Such things as standability of corn and grain, winter-hardiness of alfalfa, occurrence of blank stalks and barren ears in corn, nutritive value and palatability of forages, etc., are all related to both the level of fertility and the balance of fertility in the soil.

It might be asked, how can the farmer be sure that he is adding the right kind and grade of fertilizer and that he is maintaining the proper balance of plant nutrients in the soil? The only reliable way is by soil testing.

The trial and error or "guessing" method is much too costly and inaccurate. The farmer can't afford to use this method and the fertilizer dealer can't afford to let him use it either. If poor yields result because of an unbalance of plant nutrients, then part or all of this farmer's business may be lost. If the fertilizer dealers would encourage farmers to have their soil tested and to follow the fertilizer recommendations based on this test, then they would be of real service to their farmer-customer. On the other hand, if the dealer has no interest in the fertility problems of the farmer, or if he promotes sale of some grade of fertilizer simply because he has a lot of that grade on hand, then the dealer could very easily be of real disservice to the farmers.

A balanced fertility program is the key to profitable crop production—the beginning of such a program is a good soil test and fertilizer recommendation.

*Adapted from paper presented by Leo M. Walsh, Extension Specialist in Soils, University of Wisconsin, Madison, before group of Wisconsin Lime and Fertilizer Dealers.

CUSTOMER ADVISORY PANEL—International Minerals & Chemical Corp., Skokie, Ill., recently called a meeting of its "Customer Advisory Panel" composed of 12 men representing a cross-section of leadership in the fertilizer industry. (Croplife, March 28, page 4) The recent meeting is the third since the panel first met at IMC's invitation a year ago. Industry leaders participate on a rotating basis, with two new members coming in at each meeting. Present at the recent session at Skokie were the men pictured above: (front row, left to right) L. G. Black, president, Ark-Mo Plant Food, Corning, Ark.; John C. Crissey, division manager, GLF Exchange, Ithaca, N.Y.; Alex Mooney, general sales manager, Canada Packers, Ltd., Toronto, Ont.; W. Newton Long, chairman, Miller Chemical & Fertilizer, Baltimore, Md.; (standing, from left) T. F. Bridgers, president, Farmers Cotton Oil Co., Wilson, N.C.; J. D. Stewart, Jr., president, Federal Chemical, Louisville, Ky.; Richard E. Bennett, president, Farm Fertilizers, Omaha, Neb.; W. F. Williamson, Sr., president-general manager, Louisiana Agricultural Supply, Baton Rouge, La.; Edward D. Kingsbury, vice president, Kingsbury Co., Indianapolis, Ind. Panelists not shown are W. F. Farley, vice president, E. Rauh & Sons Fertilizer, Indianapolis, Ind., and Arthur R. Mullin, manager, fertilizer department, Indiana Farm Bureau Cooperative, Indianapolis.

Thimet Approved

NEW YORK—Thimet, a systemic insecticide, has been accepted by the U.S. Department of Agriculture for use in the control of sugar beet leafhoppers and mites.

The approved claim states that Thimet phorate 10% granular can be applied to sugar beets at time of seeding at the rate of 10 lb. per acre by broadcast or drill application. It controls leafhoppers and mites four to six weeks after the seedlings emerge, the makers state.

North Dakota Fertilizer Sales Jump in 1959

BISMARCK, N.D.—Fertilizer tonnage figures for 1959 have been computed by the State Laboratories Department and show that farmers have been using more and more fertilizer every year since 1950.

L. A. Koehler, state food commissioner, said the increase has been nothing less than fantastic. In 1950, a total of 20,200 tons were used. In 1959, a total of 141,863 tons were used.

The three most popular fertilizer material formulas used were ammonium phosphate 16-20-0, ammonium phosphate 11-48-0, and superphosphate 45-46%. These three preparations accounted for 59% of all commercial fertilizer sold in North Dakota last year, Mr. Koehler stated.

Tonnage figures since 1954 are: 1954—48,642 tons; 1955—58,693 tons; 1956—76,199 tons; 1957—98,935 tons; 1958—112,473 tons, and 1959—141,863 tons.

'CHARLIE' PARKER DAY

WASHINGTON—The National Aviation Trades Assn. plans to launch a nationwide membership drive on April 21, 1960, the anniversary of the death of their former executive director, Charles A. Parker. To honor "Charlie" Parker, the executive committee of NATA has designated April 21 as "Charlie Parker Day."

INSPECTION FEES CUT

SALEM, ORE.—The inspection fees for fertilizer in the state of Oregon have been reduced from 10¢ to 5¢ per ton, according to an announcement made recently by the Oregon State Department of Agriculture.

Until now the fees have been set by law, but because fertilizer sales in the state have outgrown the estimates upon which the original fee was based, surplus moneys have been accumulated in the inspection fund. The department last year asked the state legislature to allow the department to have the authority of adjusting fees as needed in line with costs of carrying out the fertilizer program.

This permission was given, and thus the reduction has been made—welcome news to those who sell fertilizer in the far western state.

The department was also given the authority to set the fees for inspection of agricultural minerals and limes, but "volume of sales has not increased to the point where inspection fees can safely be reduced." The fee here is 2¢ per ton.

Sales of fertilizers in the state have increased from an estimated 123,328 tons in 1952 to 186,194 tons last year. Final quarter sales of 18,793 tons for the year recently ended were a record for the quarter.

PEST CONTROL IN STORED GRAIN—A recent Douglas Chemical Co. meeting at North Kansas City, Mo., included a short course in controlling pests in stored grain. The above photo shows W. Keith Whitney, standing, entomologist from Kansas State University, Manhattan, emphasizing a point with colored slides on screen. Operating the projector is John R. Pederson, also a K-State entomologist who participated in the program. The group being instructed are Douglas salesmen. Below, Paul Smith, left, sales manager and W. C. McCaslin, executive vice president of Douglas, express their appreciation to Mr. Pederson and Mr. Whitney for the educational presentation. The Kansas entomologists devoted a full day to the subject of stored grain insects and their eradication at the meeting held in March. The event is an annual one at which personnel from Kansas State University entomology staff give a refresher course to Douglas salesmen.

Pesticide Controls In Future Forecast At Oregon Meeting

SALEM, ORE.—"Probably some control over the user of pesticides will come in the next 12 to 15 years," according to D. W. Dean of the Agricultural Research Service, U.S. Department of Agriculture, San Francisco.

Speaking before 400 producers and applicators of pesticides at the first statewide conference on pesticide importance and use held in Oregon, Mr. Dean predicted the possibility that such control "may be on a prescription basis."

Another USDA representative, Arnold Morton of the Food and Drug Administration, warned the user to follow directions carefully lest he jeopardize their use by the whole agricultural industry. Users could be held responsible for illegal residues, he said, because "the applicator is a principal in the eyes of the law, and may be joined with the shipper in charges made under the food and drug act."

A pesticides law in Oregon is more stringent than the federal law, according to J. D. Patterson, chief chemist of the State Department of Agriculture. The Oregon law permits restricted licensing where necessary, and under this provision 18 such restrictions have already been placed, Mr. Patterson explained. The department also has the power to establish residue tolerances, he said.

A reassuring note, given by Dr. William Durham of the Public Health Department, Wenatchee, Wash., was that there is no need for concern about accidents to persons using the chemicals or in the vicinity, if the materials, no matter how potentially hazardous, are used according to directions.

The chemical industry spends about five years of research on the average pesticide before it is introduced, the applicators were told by Dr. Roy Hansberry, director of Shell Laboratories in Modesto, Cal. Dr. Frank Fitzgerald of American Cyanamid Co., New York, estimated that about $150,000 goes into toxic residue studies of a product, as but one of the heavy costs charged to research and development of an agricultural chemical.

Entomology Research Laboratory Approved

SIOUX FALLS, S.D.—Sen. Karl Mundt has announced that designs for a new $500,000 entomology research laboratory to be built at Brookings have been approved.

The design as developed by the firm of Hughill, Blatherwick, Fritzell and Kroeger of Sioux Falls, calls for a main building for office and laboratory purposes, a greenhouse unit, storage shelter, shop and a mixing plant. All buildings will be one story high. Exteriors will be of brick, concrete and glass.

The project will provide approximately 32,000 sq. ft. of floor area for agricultural research.

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Aerial Sprays Recommended By California Consultant

SAN FRANCISCO, CAL.—Stuart W. Turner, consulting agrologist, San Francisco, has recommended to all aerial applicators that chlorinated hydrocarbons be used in spray, rather than dust form. In a communication distributed by the Agricultural Aircraft Association, Mr. Turner pointed out that patchwork patterns of field layouts in the irrigated valleys of California may lead to contamination of adjacent pastures.

Mr. Turner's recommendation of using sprays rather than dust was specifically urged in instances where hay, pasture, or other forage crops intended for cattle feeding are in the vicinity of fields of crops such as tomatoes. While there is some advantage, he said, to combining DDT with sulphur in a normal tomato program, spray application is still recommended, even though it might necessitate two separate applications.

Entomology Workshop Scheduled for August

RENO, NEV.—New developments in insect-control, taxonomy, insecticides, and biological control will be emphasized in a summer workshop in economic entomology scheduled for Aug. 16-20 at the Max C. Fleischmann College of Agriculture, University of Nevada.

According to the announcement by Robert W. Lauderdale, extension entomologist, the workshop is especially designed for professional agricultural workers.

The morning sessions will be devoted to classroom lectures. Field trips and laboratory work are planned for the afternoon sessions.

Instructors for the workshop are Mr. Lauderdale; Robert C. Bechtel, Nevada state department of agriculture; and Harold Chapman, agricultural research service entomologist. Howard Christensen, teacher trainer of vocational agriculture education, University of Nevada, is in charge of arrangements.

Monsanto Appointment

ST. LOUIS—The appointment of Franklin J. Cornwell of St. Louis as assistant to the vice president of marketing of Monsanto Chemical Co. was announced by John L. Gillis, vice president.

Mr. Cornwell, whose appointment became effective April 1, initially will be assigned to special projects. His permanent responsibilities will be announced later.

Mr. Cornwell was previously with Monsanto from 1953 to 1957, serving as director of sales and later as director of advertising and sales promotion for Monsanto's former consumer products division. He resigned from Monsanto in 1957 to become general manager of the carton division of Alton Box Board Co.

The Week in WASHINGTON

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON—Political imponderables hover over the scene as the fertilizer and pesticide industries seek to determine what the chances are for increased tonnages during the 1960 crop year. The apparent decline of the Benson star and the political aspects of the farm program now emerging indicate that the sales outlook for the chemical industry is not bad. A recent report by a House Appropriations Sub-Committee said a top-level economic adviser of the U.S. Department of Agriculture had forecast a smaller decline in overall farm income than had previously been contemplated.

There is no real reason to believe that during the current sales year, fertilizer and pesticidal deliveries should reflect a lower farm income. This may be particularly true in the corn belt where rising hog prices should encourage greater corn production even though the national average price support level for corn has been lowered from that of last year. Chemical aids to raising good crops will continue to be an attraction to growers.

Practically every angle of 1960 farm considerations will be geared to politics, now considered the most significant influence for agricultural commodity markets. Politicians (of both parties) being what they are, it is likely that they will strive to instigate farm policies which will put firmness and strength into the agricultural economic structure.

On the Republican side, Richard Nixon, widely regarded as the choice candidate for nomination by that party, is reported to be working toward firming up major farm commodity prices. This opinion has been voiced in Washington by representatives of large lending institutions in the East who contend that, in the end, it may be less expensive to retain high price supports than to pay the cost of moving inefficient farmers into urban occupations. Indications here are that the subject of farm prices will not be deserted by Nixon as his influence rises. On the contrary, better farm prices may even be encouraged by his activities.

Such an idea is given credence by current events in Washington. Recently, USDA maintained its price sales policy for its stocks of soybeans which put a floor under the bean market now generally selling above the USDA price support level.

In another area, USDA withdrew its oats stocks from the PIK program, forcing exporters to seek supplies from the free market. To the extent that USDA will maintain a subsidy on export oats, this will mean that the export trade will have to buy all supplies from farm stocks or from open market stocks.

As usual, weather has a strong influence on plantings. Heavy snows in the late winter weeks may prevent some oat plantings in the Great Plains States, which means that in many cases other crops such as corn or soybeans may occupy acres originally intended for oats. If this is the case, oats prices may be headed upward regardless of what the politicians say.

Despite an indication of depressed farm income this year, it appears that the industry may prepare for a firm market for its products. The administration and its heir-apparent, Mr. Nixon, will not leave a stone unturned to build a solid backing for the delicately-balanced farm belt vote.

Buys Interest in Scottish Tank Firm

CHICAGO—Union Tank Car Co. has announced the purchase of an important interest in Mechans Ltd., Glasgow, Scotland, a major United Kingdom fabricator of storage tanks, spheres, pressure vessels and other metal and plastic products.

This investment represents a significant expansion of the company's international operations which are managed by its Union Overseas Company division, a spokesman said.

APPLICANTS WANTED

SAN FRANCISCO—The California Department of Agriculture is seeking qualified persons to help protect California's multi-billion dollar agricultural industry.

William E. Warne, state director of agriculture, said the department is arranging examinations to be held throughout the state to establish lists of persons qualified for appointment as county agricultural inspectors on the staffs of county agricultural commissioners.

Agricultural inspectors inspect plants and plant products for the presence of insect pests and plant diseases, enforce plant quarantine regulations, engage in rodent and weed control work, enforce state standards of quality for fruits, vegetables, nuts, eggs and honey and do other work as required.

Employment is available in several counties. Salaries and working conditions are set by county boards of supervisors.

Information regarding qualifications, scope of examinations, and application blanks may be obtained from the Personnel Office, California Department of Agriculture, Sacramento.

Hercules Re-Elects All Company Officers

WILMINGTON, DEL. — Directors of Hercules Powder Co. at their annual reorganization meeting re-elected all officers of the company as follows: Albert E. Forster, president and chairman of the board; Wyly M. Billing, John J. B. Fulenwider, John R. L. Johnson, Jr., Paul Mayfield, Edward B. Morrow, vice presidents; J. H. Tyler McConnell, secretary, and E. Charles Stump, assistant secretary; John E. Goodman, treasurer, and George B. Baylis, Arthur L. Perry, Alto J. Smith, Paul J. Weber, assistant treasurers.

The directors also re-elected the executive committee: Mr. Forster, chairman; Mr. Billing, Mr. Fulenwider, Mr. Johnson, Jr., Mr. Mayfield, and Mr. Morrow.

Re-elected to the finance committee were: Mr. Morrow, chairman; Mr. Forster, Mr. Goodman, Mr. Johnson, Jr., and Mr. McConnell.

LAWYER

(Continued from page 13)

able to judge how your work should be allocated. However, it is your organization that has to be satisfied, and you are entitled to be heard on the subject. After you have had some experience with the firm, you should rapidly lose any feeling that all of your work should be taken to the senior partner level. You will probably want to rely on a senior partner for advice on questions of major importance. He may be the man who should appear for you in court. He should be your legal spokesman. But the bulk of your legal work can certainly be performed at lower levels.

Representation on a Final Basis

If you are satisfied with the results of your initial discussion, you may suggest that your selected counsel undertake to do some legal work for you on an introductory or trial basis. He should not be offended by the suggestion and may, in fact, welcome it. He may know less about you than you do about him, and he may have some reservations about undertaking to represent you on a permanent or full-fledged basis. Obviously, if you are not altogether pleased with the results, you should start to review other possibilities before becoming too heavily involved with your first choice.

Plant Diseases Book Issued By Philadelphia Firm

PHILADELPHIA—A new book entitled "Compendium of Plant Diseases," illustrating distinctive symptoms of the most important diseases of widely grown plant crops, has been announced by Rohm & Haas Co., Philadelphia. The new book is a 264-page volume, in hard-cover binding, and includes 125 color plates.

It is presented in four sections: diseases of vegetables; diseases of fruits and nuts; diseases of field crops and diseases of specialty crops.

Nutritionist Hails Phosphate Usage

RENO, NEV. — Dr. L. E. Dunn, plant nutritionist, Nevada Agricultural Experiment Station, told the Western Phosphate Conference at Tucson, Ariz., recently that crop yields on most Nevada soils can be increased by the use of phosphate fertilizer.

Dr. Dunn's report was based on research aimed at determining the correlation between chemical soil tests and plant responses to phosphate fertilizer. Three different chemical tests, plant analysis, and plant responses were analyzed in the research.

A sodium bicarbonate method of testing showed the highest correlation in both plant response and plant analysis at the hay stage of alfalfa. The results indicated that when the sodium bicarbonate test shows less than 50 lb. available phosphate per acre, the soil is deficient in phosphorus for best plant growth. For crops growing on some soils responses to phosphate fertilizer were found when the soil test showed phosphate levels ranging from 50 to 100 lb.

Research workers from other western states presented data indicating that the value of phosphates in plant growth is also moisture, aeration, and temperature. Cultural practices were also found to affect the availability of phosphates in the soil for growing crops.

ASSISTANT NAMED

TOLEDO, OHIO—John W. Luce, veteran industrial engineer, has been appointed assistant to Tom W. Brown, Jr., division manager of the Multiwall Bag Division of Owens-Illinois Glass Co. Mr. Luce will direct research and new product development.

IF AT FIRST YOU DON'T SUCCEED . . .

WILLCOX, ARIZ.—Because a shotgun brigade wasn't entirely successful at routing birds from the lettuce fields here, farmers have adopted their newest weapon, a low flying crop duster plane with siren blasting. Tinfoil streamers are also helping.

Growers indicate that some 3,000 acres would be planted this spring.

Sales Representative Named by Delavan

WEST DES MOINES, IOWA — Delavan Manufacturing Co., West Des Moines, has announced the appointment of Marco T. Castano, Lemarco Agricultural Spraying & Machinery Co., as manufacturer's representative in Central and South America, including Cuba, Puerto Rico, Haiti and the Dominican Republic.

Mr. Castano will handle Delavan's line of agricultural nozzles and accessories.

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

HANDBOOK OF AGRICULTURAL CHEMICALS —Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... $5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages $8.50

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T. F. West and G. A. Campbell

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Dr. E. R. de Ong

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Basic Role Seen for Academic And 'Industrial' Agronomists

By George D. Scarseth
Director of Research
American Farm Research Assn.
West Lafayette, Ind.

WHAT IS THE role of the "industrial agronomist" as compared to those working in the academic field, for instance? Since this writer has been through many experiences in colleges and universities —as well as in the commercial world —he feels qualified to observe that a true agronomist is a true scientist, regardless of who pays the salary.

In years past, there were those who would set apart those scientists who were associated with industry, but fortunately, this is now history and the industries needing agronomic help want nothing but people of the highest integrity. High integrity is part of our industrial process in a free world of competition.

American farming is also moving into a field of high competition. Competition between farmers within the crop production area, from new discoveries in science and in engineering, is calling for new practical interpretations of the fundamentals from agronomists. This competition in America is part of our strength. Competition that brings on improvements in materials, practices and services is one big difference between our way of doing business and state-dictator countries.

Whenever I attend a fertilizer conference in America I am impressed by the number of agronomists employed by our fertilizer industry. In Russia there are no agronomists employed by a competitive fertilizer industry, because there is no such industry. There is no measure of what our agronomists employed by the industry contribute, but it is safe to assume that they add to the healthy status of our agronomic thinking and work.

The agronomists employed by the industry are not in a position to train many students effectively. This is an area fitted to our agronomists in the colleges. However, both groups can well afford close collaboration as they have the common ground of obtaining a better use of our resources in growing crops and caring for the soil.

The colleges would do well to make fuller use of agronomists from the industries to do some student training. Already the industry is using some agronomists from the colleges as consultants. More of a two-way bridge across the ivy walks is certain to be healthful for all and will go a long way to win more support for our sciences both on and off the campuses.

A new factor is growing to affect both agronomic groups; this is the new crop of college trained men who are becoming the farmers. These new farmers will do some of their own agronomic thinking, and they will expect highly trained and reliable agronomists from their colleges as well as from those employed in the industries.

In this age of surpluses in crop production one frequently hears the tom-toms of misinformed people who say we need a moratorium on agronomic and production research. This merely points up what a poor job we have done in our public relations.

While some 2 billion people of the world have too little to eat or bad diets, our own surpluses mislead or confuse many of us. We would be near starvation in the U.S. today if there had been no agronomic research. Nearly as shocking is the fact that we are still "mining" most of our soils and living on inherited fat (natural organic matter and soil fertility).

Our corn production comes from too many acres producing too low yields, and much of such land suffers destruction by erosion. Yet, now we can build and save the land while using it for very high corn yields.

We won't go into such cases as that of wheat, cotton, tobacco, potatoes and other crops.

We agronomists tend to be modest and stay in our own laboratories, silent and resentful, while the politicians bring on "Soil Banks" that have little or no sound agronomic principles in them and are not soil saving devices.

What is the role of agronomists in the industry, in the colleges, or agronomists everywhere? The role of agronomists is to lift the curtain of blindness from the eyes of all people about our basic resources of soils and water and the crops that we hope to produce in ever increasing abundance and efficiency for the increasing number of people who must eat and wear clothes and find shelter.

The scientists who have the talent and training to advance the frontier of knowledge through fundamental studies will be more adequately supported when this is done.

Warfarin Production Starts in Canada

MADISON, WIS.—According to an announcement by the Wisconsin Alumni Research Foundation, Warfarin, a rodenticide, now has a Canadian producer.

The new Canadian producer will supply the compound to formulators of warfarin-based products, in both the rodenticide and pharmaceutical fields throughout Canada, the foundation said.

The name of the manufacturer was not disclosed.

Pesticide Courses

SACRAMENTO—The first of four five-day courses for the dairy laboratory technician in the extraction, purification and analysis of pesticides present in dairy foods and feeds will be held April 4-8 at the University of California, Davis.

Later sessions will be held on alternate weeks thereafter with additional sessions to be scheduled if demand warrants.

Lectures will be given by the faculty and officials of the State Department of Agriculture on pertinent federal and California laws, chemistry and toxicology of pesticides, isolation and purification of pesticide residues and theory and practice of chromatography and colorimetry.

Leonard Engel Irving C. Keller

ADVANCED — Leonard Engel, former assistant purchasing manager for The American Agricultural Chemical Co., has been named manager, purchasing department, by C. M. Powell, company president. Mr. Engel joined the company's purchasing department in 1914, and has been assistant manager of the department since 1940. Irving C. Keller, a member of The A.A.C. Co. purchasing department since 1937, has been named assistant manager, purchasing department.

Receives Award for New Sulfuric Plant

CHICAGO—Leonard Construction Co. of Chicago has announced receiving the contract award for furnishing materials, engineering and design for a Leonard-Monsanto contact sulfuric acid plant to be constructed in the Los Angeles area for the Collier Carbon and Chemical Corp.

The plant, which will have an initial rated production capacity of 250 tons of acid per day, will use spent alkylation acid, hydrogen sulfide and sulfur as raw materials.

The plant is designed specifically to meet the rigid air pollution regulations of the area, the company said, and one of its unusual features is the Brink mist eliminator which will be installed to control fume emission from the stack.

The plant is scheduled for completion by late 1960.

APPEAL

(Continued from page 1)

there was doubt that the spraying would be repeated. The matter was therefore considered to be a dead issue.

As for money damages to the plaintiffs, the court said that such damages were not proved, and that adequate proof was lacking as to injury to animals, gardens, and to public health.

In his minority opinion, Justice Douglas mentioned widespread fears about the effects of DDT which he said may cause "mounting sterility among our bald eagles," and has a bad effect on birds and other wildlife in general, and possibly is a factor in human blood diseases. "The alarms that many experts and responsible officials have raised about the perils of DDT underline the public importance of this case," he wrote.

The petition for review by the U.S. Supreme Court had been opposed by Louis J. Lefkowitz, New York's attorney general, as well as by J. Lee Rankin, solicitor general.

THAT 'COME HITHER' SMELL

WASHINGTON—"Q-lure" is the name of a new melon-fly chemical attractant synthesized and tested by U.S. Department of Agriculture chemists and entomologists. It has been found many times more effective than methyl eugenol—heretofore the best available synthetic attractant for the melon fly.

The new lure attracts male flies of all ages, unlike previous male melon fly lures, which attract only mature adults. By attracting even immature males, Q-lure permits detection of infestations before the insects can mate and build up damaging populations.

Tests of the new melon-fly lure have been carried out at the fruit fly laboratory of the Department's Agricultural Research Service in Honolulu, Hawaii. Research is now underway to determine whether the new lure can be combined with suitable poisons, so that the melon fly—an insect with tremendous reproductive potential—can be eradicated by male annihilation. This technique is aimed at drastically reducing the fly's male population and thus limit propagation of the species.

Kentucky Tax Does Not Apply to Fertilizers

FRANKFORT, KY. — The new sales-and-use tax recently passed in Kentucky does not cover purchases of fertilizer for land on which the farmer intends to raise tomatoes for sale, nor on land on which he will grow tobacco for resale, according to state officials.

However, urban residents, buying fertilizer for home gardens, lawns and other non-agricultural purposes will pay the tax after July 1 when the law becomes effective.

The tax also applies to farm machinery.

COATED

(Continued from page 1)

12-12-12 per acre was broadcast. It kept the lawns green from May through August, as did smaller amounts.

Dr. William P. Martin, head of the soils department at the University of Minnesota, said that the idea was a good one, but the university hesitated about making any definite statements until more tests could be completed.

"Actually there hasn't been enough research on it as yet. There has been some work done on similar projects elsewhere in the U.S.," he said, "and of course we will continue to test it here this coming summer. We are very enthusiastic about the prospects."

According to Dr. Martin, Purdue and Michigan State Universities have become involved in somewhat similar projects.

Credited as being one of the instigators of the idea in the Minnesota area is Dan Williams, manager of the Minnesota Farm Bureau Service Co., St. Paul. Mr. Williams suggested preliminary research about three years ago.

"At that time, a fine coating was developed, but it was too costly to produce," Mr. Williams said.

Following this, ADM took an interest in the project and the resultant research has developed.

"We know how to pelletize the materials, and we're already doing that. What we want now is a good, economical coating. The once-over fertilizer that could be made from it would eliminate many problems that are apparent in the industry now. One very important advantage of coated fertilizer is that it could be effectively controlled," Mr. Williams said.

ADM emphasized that at this time it has no coated fertilizer for sale. If, however, the coating process proves to be successful and economical, such fertilizers may become available within the next few years, ADM says.

BENEFITS

(Continued from page 6)

ylthiouracil, propylthiouracil, and now aminotriazole.

"Before the cranberry episode my associates and I had been looking for an antithyroid compound that might have a longer duration of action than those currently in use for the treatment of hyperthyroidism and Dr. W. E. Mayberry had found that aminotriazole might be such a compound. A single oral dose of 100 mg. inhibited radioiodine uptake by the thyroid of normal and thyrotoxic subjects for 24 hours, which means that there is a possibility of therapy with one dose per day; 10 mg. had only a slight effect.

"Should experience show the compound to be well tolerated, we will be faced with the anomalous situation that an effective remedy suitable for human use is banned from use in killing weeds."

Sulfur Application on Range Forage Increases Yield, Research Finds

WASHINGTON—Use of sulfur fertilizers on California annual ranges increases forage yields, but gypsum —the common source of sulfur so used—is of questionable value because it is highly soluble and leaches excessively in seasons of heavy rainfall, the U.S. Department of Agriculture has reported.

Federal-State experiments with sulfur fertilizer were started in 1958 at the San Joaquin Experimental Range in California's Sierra Nevada foothills. Lysimeters — tanks filled with soil and equipped to measure soil nutrients lost through water percolation or runoff—were seeded with rose clover and fertilized at per-acre rates of 100 to 300 lb. gypsum containing about 20% sulfur.

Nearly 77% of the applied fertilizer was leached out of the lysimeters, according to Cyrus McKell, range plant physiologist of USDA's Agricultural Research Service, and William A. Williams, California Agricultural Experiment Station agronomist.

Clover fertilized with sulfur showed significantly greater growth in the experiments than clover in untreated check plots. Radioactive tracers showed that the rose clover obtained 31% of its sulfur content from the 100-lb. an acre gypsum treatment, and 57% from the 300-lb. application.

A part of the sulfur requirement of plants is provided by rainfall. Sulfur is carried into the atmosphere from decomposing organic matter, evaporating ocean water, and discharging combustion gases from burning fuel. It is returned to the land by rainfall. In 1958, a season of above average precipitation, the scientists found that rainfall added about 21 lb. sulfur an acre to the soil, and 1 lb. an acre was absorbed by the plants directly from the air.

The studies of fertilization with sulfur indicate that sulfur-bearing materials less subject to leaching than gypsum should be investigated, the scientists said. Further experiments on sulfur use by plants and sulfur losses from soil are now underway.

Kansas Expects Less 'Hopper Trouble in '60

MANHATTAN, KANSAS — Grasshoppers are expected to be less of a problem in Kansas this summer than for several years, according to Leroy L. Peters, Kansas survey entomologist who is stationed at Kansas State University, Manhattan.

Mr. Peters and Dell E. Gates, extension entomologist, who conducted the survey, base this estimate on surveys taken late last summer and fall, in cooperation with the U.S. Department of Agriculture. A few counties in extreme western Kansas may expect light damage.

Oddly enough, the surveys indicate that the "red-legged" grasshoppers will do the most damage this year. This is unusual, because they have been of little economic importance in recent years. Most damage has been caused by "migratory" and "differential" grasshoppers.

A further survey of grasshopper nymphs will be made by Mr. Peters and Mr. Gates in April to get an idea of how many grasshopper eggs have hatched, and for an indication as to whether chemical control measures will be needed.

PROMOTED

MOSES LAKE, WASH.—Burl B. Wyckoff has been promoted to Western Farmers Assn. district manager for eastern Washington with headquarters at Moses Lake. A. J. Oldenburg replaces him as manager of the fertilizer and farm chemicals department in Seattle, Harry J. Beernink, association general manager, announced.

TREATED GRAPEFRUIT

HARLINGEN, TEXAS — Fumigation of Rio Grande grapefruit shipped to southern states was to start April 1, according to the Plant Pest Control Division of the U.S. Department of Agriculture in Harlingen.

B. C. Stephenson of the department says the new regulations require treatment with ethylene dibromide before shipment of grapefruit to Alabama, Arkansas, Georgia, Louisiana, Mississippi, Oklahoma, South Carolina and New Mexico.

The regulation applies to single box shipments, carloads and truck loads. A similar regulation is already in effect on citrus shipped to Arizona, California and Florida.

Canadian Entomologists Check 1960 Insecticides

GUELPH, ONTARIO—Insecticide experts are keeping a closer check than ever on 1960 bug killers because of contamination dangers. H. W. Goble, provincial entomologist, says: "We've already taken several insect killers off our recommended list because of the chance of meat and milk contamination. Officials of the national health and welfare department in Ottawa have ruled that insecticides that leave residues on feed and market crops can no longer be used."

Crops to keep out of livestock feeds will be pea vines on which DDT was used for aphid control, and corn husks and cobs that have been treated with endrin or DDT for corn borer control. Forage crops on which aldrin, endrin, dieldrin, toxaphene or DDT was applied might be contaminated too. When these crops are eaten by animals, the chemicals may stay in the milk or meat.

A cash crop insecticide, heptachlor, has been taken off the recommended list for market crops, states Mr. Goble. Heptachlor should not be used for control of root maggot on turnips, radish, and onions; or for control of carrot rust fly, wireworms, cutworms, and white grubs on potatoes. Heptachlor may be used on lawns, golf courses, shade trees, and in any place where food crops are not grown.

Phosphate-type insecticides such as malathion, parathion, guthion, and phosdrin may be used on crops fed to livestock. But only if there is sufficient time between treating and feeding for the residues to escape. These time-spans appear on the manufacturer's label.

Tolerances Established For Tedion Miticide

NEW YORK—The Food and Drug Administration has established tolerances for Tedion miticide and the U.S. Department of Agriculture has approved its use on 11 deciduous fruits, announced Stuart Bear, manager of the Niagara Chemical Division of Food Machinery & Chemical Corp. Thus for the first time the chemical can be used on these crops for mite control throughout the season, providing growers with a much broader, more effective weapon.

With the new approvals, Tedion can be employed to control essentially the complete mite complex. Previously, applications could be made only up until petal fall which, for the most part, limited its control to the early-appearing European red mite. Now treatments can be made when fruit is present on the trees in order to control summer mites—two-spotted spider mite, McDaniel mite, canadensis mite, and carpini mite. These species hatch from eggs laid in fields and grasses and migrate into the trees later in the season, hence can't be controlled by early sprays.

A tolerance of 5 ppm. of Tedion has been established for apples, crab apples, pears, quinces, plums, prunes, grapes, apricots, cherries, peaches and nectarines.

Chris P. Gicas | Louis H. Mehalek | Emil F. Bless

Velsicol Expands Sales And Marketing Staffs

CHICAGO — Velsicol Chemical Corp. has announced two appointments to its chlordane insecticide marketing staff and a new representative for the agricultural chemical division. Involved are Chris P. Gicas and Louis H. Mehalek who will concentrate on dealer service and sales promotion at the retail level, and Emil F. Bless who will represent the company in sales and technical service in the states of Alabama, Georgia, and northwest Florida.

Mr. Gicas was appointed chlordane marketing specialist in the southeast U.S. and will cover Florida, Georgia, Alabama, North Carolina and South Carolina. He is a graduate of the University of Wisconsin with a B. A. degree in international relations, and was formerly with Helene Curtis Industries where he handled sales promotion and also was a territorial sales representative. In addition, he spent two years with A. Stein and Co. as sales representative.

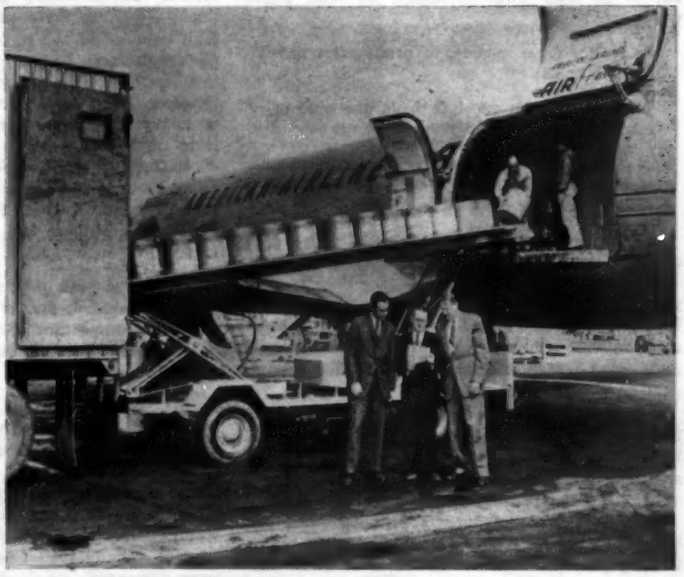
Mr. Mehalek was appointed chlordane marketing specialist responsible for Ohio and Michigan. He attended Utah State and the University of Illinois majoring in business administration. He previously was engaged in sales and sales promotion activities for Stewart-Warner Corp. and a bottling company.

Velsicol now has five chlordane marketing specialists who concentrate on dealer service and sales promotion at the retail level.

Mr. Bless will be responsible for sales and technical service in the states of Alabama and Georgia and northwest Florida. He is a graduate of the University of Kentucky with a B. S. degree in agriculture and a major in agronomy. From 1955 until he joined Velsicol, Mr. Bless was a county agricultural extension agent in the state of Kentucky. He will be responsible for the sale of all agricultural products including Chlordane, Heptachlor, Endrin and Methyl Parathion insecticides and solvents.

FEBRUARY ARKANSAS SALES

LITTLE ROCK, ARK.—Fertilizer sales in Arkansas during February totaled 22,095 tons, reported the State Plant Board here. This compares with 21,308 tons sold during February, 1959. Sales for the July, 1959, through February, 1960, period were running slightly under sales for the similar months a year ago, however.



A 12-TON shipment of Thimet insecticide being transferred from plane to truck for transportation to Imperial Valley sugar beet area. This cargo was "airlifted" from Atlanta to Los Angeles via American Airlines. In foreground (left to right): Thomas J. Lane of American Airlines, Paul J. Ryan, Holly Sugar Corp. and Hamilton Clark, American Cyanamid Co.

'Airlift' Shipment Of Insecticides Aids Beet Growers

NEW YORK — A cross-country "airlift" shipment of over 12 tons of insecticide to supply the critical needs of Imperial Valley sugar beet growers was completed with the arrival at Los Angeles International Airport of an American Airlines Airfreighter carrying 500 50-lb. drums of Thimet Granular Insecticide.

American Cyanamid Co., manufacturer of Thimet insecticide, ordered the air shipment in response to urgent requests from Imperial Valley sugar beet growers. Other shipping methods would have been too slow, it was decided, to meet the immediate needs of growers in fighting aphids, mites and leafhoppers on sugar beets.

Thimet has been in limited supply since its recent registration by the U.S. Department of Agriculture for application on sugar beet plants.

The flight, which originated in Atlanta, Ga., near where the insecticide is produced, is reported to be the largest shipment of insecticide ever made by American Airlines. Upon arrival at the Los Angeles Airport, the drums were loaded onto a trailer truck for fast motor freight shipment to Brawley, Cal.

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Confusion About 'Farm Income' Arises in Multiple Yardsticks Used for Measurement

THE VAGARIES of the term "farm income", a report on fertilizer industry deliveries since the end of the 1958-59 fiscal year, and a look into the potentialities of sales during the current season were discussed in a paper by T. M. Ware, president of International Minerals & Chemical Corp., prepared for presentation before a panel of fertilizer company executives IMC called together recently.

Since figures on fertilizer deliveries in the U.S. have not been published beyond the end of the 1958-59 fiscal year ended June 30, 1959, Mr. Ware's observations on that subject and others concerning agricultural economics seem well worth bringing before the entire fertilizer industry.

In his paper, Mr. Ware took a long look at agriculture in general and the fertilizer industry in particular, stating that much of the confusion concerning "farm income" would be eliminated if various agricultural pundits used the same set of statistical yardsticks. The subject of farm income and agricultural economics is so complex already, he said, that "a welter of confusing and misleading terms and interpretations" tends to muddy the situation further.

In fact, Mr. Ware said, the term "farm income" is itself a prime example of ambiguous terminology used to evaluate the agricultural economy. Depending on who is using the term, it can have one of at least three meanings, he said. These were listed as:

1. Net farm income, or profit after production costs;

2. Total cash receipts from the sale of farm products;

3. All income received by the farmer, including cash from sale of farm products as well as pay for off-the-farm jobs.

"Even when the term is given its proper meaning—net farm income after production costs—too many evaluators erroneously use it as a yardstick of the farmer's purchasing power," the IMC president continued, declaring that net income reflects only a small portion of the farmer's purchasing power and fails to reveal his full impact on the national economy.

"The total net farm income in 1959 was $11.8 billion," he explained, "but the farmer spent $26 billion in production costs to achieve that income and he'll spend an estimated $26.4 billion for a new record in 1960."

Mr. Ware suggested that farm cash receipts, which have risen from $9.1 billion to $33 billion in 20 years, are a better indicator of farm purchasing power, since that total includes money spent for production.

In projecting fertilizer sales, for example, the true barometer is the money available for production costs, not the net income. In good years or bad years, the farmer needs fertilizer, Mr. Ware explained.

Farm income reporting is further complicated by use of the term "average farm", he said. "There just can't be an 'average farm', when there are two distinctly different farm groups."

One group is the 37% of the nation's farms which sells about 90% of the farm products. The other 63% receive income from non-farm jobs.

Average cash receipts from the sale of farm products in the first group have increased five fold since 1940, from $2,800 to $17,000; for the second, average cash receipts have risen from $270 to $1,140.

Average net income for the full-time farms that grow about 90% of the farm products has come up from $1,300 to $5,700 in the same period, while the farms that account for the other 10% have recorded little if any gain in net income, which now stands at about $400.

But this ignores the income the part-time farmer earns from off-the-farm sources, which amounts to an average of $2,700—seven-eighths of his total income. Total non-farm income has risen from $2.7 billion to $6.7 billion in the last 20 years.

The IMC spokesman reported that through his company's investigations, fertilizer activity since July 1, 1959, mixed goods shipments were 8% below that of the same period of the year before.

Here is a month-by-month report of July through December as described by Mr. Ware: July, 1959, shipments up 15%; August, up 7%; September, off 8%; October down 29%; November down 10%, and December, about even.

For the first five months of this fiscal year, potash shipments were only 2% below last year. Shipments the first two months were just about the same as last year, but were off 5% in September and 9% in October. November shipments exceeded last year's level by 11%. December figures are not yet available, he said.

Shipments of triple superphosphate for the first six months were 11.6% higher than for the same period last year. Despite poor weather conditions that adversely affected fall fertilization, triple superphosphate shipments continued at a high rate to fill the pipeline that had been completely drained. Shipments were up the first five months: July, 57%; August, 10%; September, 25%; October, 15%; November, 14%. Mainly because of heavy exports, domestic December shipments were off 28%.

Phosphate rock shipments for the first six months were the same as the year before. Monthly reports show: August, 21% up; September, 5% up; October, down 21%; November, down 4%; December, unchanged.

The outlook beyond 1959-60 is impossible to predict, Mr. Ware said, because one of the important factors, the number of acres harvested, is determined by political decisions.

Mr. Ware said that a recent check of the "yardstick" used in his company's compilation showed the statistical error amounting to less than 2%.

As was pointed out by the fertilizer executives comprising the panel at IMC's recent meeting, weather this spring has played havoc with deliveries usually well under way at this time of year. However, these observers stated that the situation so far is not one of permanent nature, and the industry may yet recoup from the delay.

Use Chemicals Wisely

SINCE chemicals cannot be eliminated, the need for wholesomeness in the nation's food makes it imperative that agricultural chemicals be used wisely. The orchardist who controls the set of fruit on his trees with a spray application at blossom time knows that if the spray solution is too weak he gets no thinning, and if it is too strong he gets no fruit.

"Many of the chemical products used in agriculture today are equally delicate. The balance between too much and too little involves small tolerance. Thus it behooves the producer to follow the instructions with care. In so doing, he will obtain full benefit of the materials and eliminate any risk of deleterious residues in the product he raises."—Prof. Herrell DeGraff, Cornell University.

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March 27-30—American Mosquito Control Assn. 16th annual meeting, Somerset Hotel, Boston, Mass.

April 11-12—Eighth annual California Fertilizer Assn. Conference, sponsored by CFA Soil Improvement Committee, Fresno State College, Fresno, Cal.

June 9-11—Manufacturing Chemists' Assn. 88th annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 12-15—National Plant Food Institute annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 13-16—Western Society of Soil Science meeting, University of Oregon, Eugene, Oregon.

June 21-22—Eighteenth Annual Convention, Association of Southern Feed & Fertilizer Control Officials, Riverside Hotel, Gatlinburg, Tenn. For further information, write Maurice B. Rowe, secretary-treasurer, Department of Agriculture, 1119 State Office Building, Richmond 19, Va.

June 27-29 — Northwest Section, American Society of Range Management summer meeting, John Day, Oregon.

June 27-28—Pacific Branch, Entomological Society of America, Davenport Hotel, Spokane, Wash.

July 11-13—North Central Agronomy Society, Summer meeting, University of Minnesota Farm Campus, St. Paul, Minn.

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific Northwest, Hotel Utah, Salt Lake City; B. R. Bertramson, State College of Washington, Pullman, Wash., chairman.

July 27-29—Great Plains Agricultural Council, 1960 meeting, Laramie, Wyo.

July 27-30—Southwest Fertilizer Conference and Grade Hearing, Galvez Hotel, Galveston, Texas.

Aug. 2-3 — Ohio Pesticide Institute, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 15-23 — Seventh International Soil Science Congress, University of Wisconsin, Madison, Wis., Prof. Emil Truog, Congress Manager, Soils Building, College of Agriculture, Madison 6, Wis.

Aug. 21-25 — Canadian Fertilizers Assn., annual convention, Manoir Richelieu Hotel, Murray Bay, Quebec, Canada. H. H. Skelton, P.O. Box 147, Hochelaga Station, Montreal, Que., Canada, general chairman.

Aug. 25-27—Mississippi Soil Fertility and Plant Food Council, 1960 meeting, Buena Vista Hotel, Biloxi, Miss.

Sept. 24-26 — Western Agricultural Chemicals Assn., 31st annual meeting, Palm Springs Riviera Hotel, Palm Springs, Cal.

Sept. 27-29—Annual meeting of National Agricultural Chemicals Assn. for 1960, Hotel del Coronado, Coronado, Cal.

Sept. 27-29 — National Agricultural Chemicals Assn., 1960 meeting, del Coronado Hotel, Coronado, Cal.

Sept. 29-30—Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6—Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 17-21—48th annual National Safety Congress, Fertilizer Section, LaSalle Hotel, Chicago.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

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SOUTH CAROLINA SALES

CLEMSON, S.C.—Fertilizer sales in South Carolina during February amounted to 57,015 tons compared with 87,345 tons for the same month in 1959, reported B. D. Cloaninger, director, fertilizer inspection and analysis, Clemson College. The total was a decrease of 30.5% from February, 1959.

Escambia Names New Product Sales Manager

ATLANTA, GA.—James A. Hunter has been named product sales manager—agricultural chemicals for Escambia Chemical Corp.

James A. Hunter

In this capacity, Mr. Hunter will be responsible for the sale of Escambia Chemical Corp.'s nitrogen products, and in that connection will work with Ashcraft - Wilkinson Co., Atlanta, Ga., the exclusive sales agent for Escambia's nitrogen products.

After graduating from the University of Richmond, in Richmond, Va., he accepted a job as salesman for Armour Fertilizer Works. Since that time he has accumulated 10 years experience in the fertilizer industry, including four years as manager of Master Chemical Corp. in North Carolina and two years as sales representative with National Potash Co., covering the northeastern U.S. and eastern Canada.

He comes to Escambia from the Texas Gulf Sulphur Co., where he was a member of their sales department.

23 More California Fertilizer Firms Register

SAN FRANCISCO — Twenty-three firms have registered in California in the past six months to sell commercial fertilizers.

The Bureau of Chemistry of the California State Department of Agriculture reports that 10 firms in northern California have been granted permits to sell farm chemicals, eight in the southern half of the state, and five firms from other states. Among the last group are the American Agricultural Chemical Co., of New York; Boyle-Midway, Inc., also of New York; Commercial Solvents Corp., New York; the Pax Co. of Salt Lake City; and the L. Teweles Seed Co., of Milwaukee.

Thirteen firms have also been registered to sell agricultural minerals for the current fiscal year, ending next June 30. These include seven in southern California, five located in northern California, and one from British Columbia, Atkins and Durbrow Ltd., of Vancouver.

ENGINEER APPOINTED

WILMINGTON, CAL. — Appointment of Billie Gordon as chief industrial engineer at the Wilmington processing facility of U.S. Borax & Chemical Corp. was announced by R. V. Chettle, plant manager. Mr. Gordon, formerly senior industrial engineer for Kaiser Aluminum and Chemical Co. at Baton Rouge, La., holds bachelor's and master's degrees in industrial engineering from Georgia Tech. He is a member of American Institute of Industrial Engineers.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $11 per column inch.

All Want Ads cash with order.

BUSINESS OPPORTUNITIES

EXCELLENT OPPORTUNITIES FOR dealers, distributors, to sell nationally advertised Campbell's Gro-Green liquid and 100% soluble crystal fertilizer concentrates. Thousands satisfied users. Established sales program. Backed by highly rated firm. Campbell Co. (Est. 1924), Rochelle 40, Ill.

DISTRIBUTORS—SOME DESIRABLE TERRitories now open for highly-profitable Arrow Brand finely-ground rock phosphate—the leader in its field. You will be backed by advertising and complete sales and promotion program. Write Dept. C. Robin Jones Phosphate Company (Est. 1902), Nashville, Tennessee.

HELP WANTED

CHEMIST—EXPERIENCE IN FORMULAtion and quality control of insecticides, fungicides and herbicides. Well established manufacturer located and operating in the Middle Atlantic area has need for two chemists in its current expansion program. Send letter stating training, experience and salary expected to Ad No. 5781, Croplife, Minneapolis 40, Minn.

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A Complete Sales Medium...

CROPLIFE is the only *complete sales medium* directed to the agricultural chemical industry. It is a newspaper appealing to all segments of the industry. One of its editorial functions is to knit more closely together all those industry elements—manufacturers, agents, retailers, the educational echelon and farm advisor groups. It does this by:

- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

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BPA *Member of Business Publications Audit*

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